SITE INSPECTION REPORT

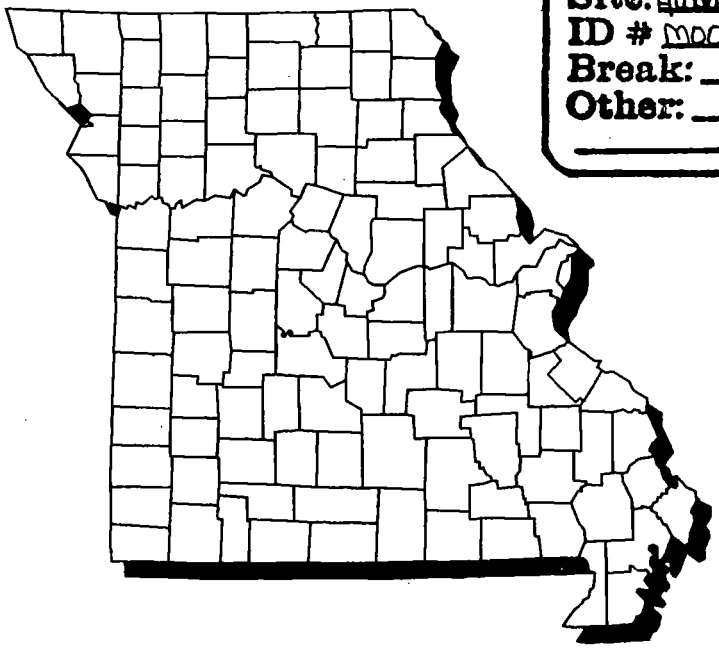
HUBERT WHEELER STATE SCHOOL

ST. LOUIS CITY, MISSOURI

September 20, 1994

Missouri Department of Natural Resources

Hazardous Waste Program



UNIVERSITY OF MISSOURI-ROLLA

HUBERT WHEELER STATE SCHOOL

School of Mines and Metallurgy

Department of Geological Engineering

129 V.H. McNutt Hall
Rolla, Missouri 65401-0249
Telephone (314) 341-4867

PA/SI REFERENCE 29

RECEIVED

'94 JAN 21 AM 10 52

HAZARDOUS WASTE PROGRAM
MISSOURI DEPARTMENT OF
NATURAL RESOURCES

19 January 1994

Ms. Julie Bloss
Hazardous Waste Management Program
Missouri Division of Environmental Quality
PO Box 176
Jefferson City, Missouri 65102
(314) 751-4758

Subject: Coal Tar Site at 5707 Wilson Ave., St. Louis

Dear Julie:

Here is the location of the Laclede Gas Company's only admitted *Former Manufactured Gas Plant*,, known as the Shrewsbury Station. I have not yet determined when Laclede Gas Co. purchased it from its builder and original owner, the St. Louis County Gas Co., but the plant has been in place since at least 1910 and at one time had seven gas holders.

This plant is a bit further from the Wilson Avenue site than I had anticipated at the time of your December phone call. In review, it's my opinion that the Shrewsbury operation was too far away to have had a dedicated pipeline for any of its residuals to have been transported in that manner to the former coal-tar processing operations that must have gone on at the Wilson Avenue site.

The sites are, however, certainly close enough (Wilson Avenue is only a little more than 2.5 miles, as the crow flies, to the NE, right up the valley then occupied by the rail roads and now by I-44) to have made transfer of coal tar residuals by wagon or, later truck. I would operate on the working hypothesis that the coal tar wastes were supplied from the Shrewsbury works. In my opinion, there was a commercial link between the two sites. Coal tar processors generally were found in the near vicinity of the larger manufactured gas works.

Yours truly,

Allen W. Hatheway
Professor of Geological Engineering

Encl. Enlarged copy of AAA street map of St. Louis City and County


LADUE
BRENTWOOD
63144
MAPLEWOOD
63143
63139
ROCK HILL
GLENDALE
WEBSTER GROVES
63109
SHREWSBURY
63119
MARLBOROUGH

File: Hubert Wheeler State School

BERT WHEELER STATE
IOOL

PA/SI REFERENCE 30

STATE OF MISSOURI

DEPARTMENT OF NATURAL RESOURCES

MEMORANDUM

DATE: January 27, 1994

TO: Hubert Wheeler State School Superfund File, St. Louis City

FROM: Julie A. Bloss, Environmental Specialist
Site Evaluation Unit, Superfund Section
Hazardous Waste Program

SUBJECT: Site Visit to Hubert Wheeler State School

On January 12, 1994, I traveled to the Hubert Wheeler State School site in St. Louis City, Missouri. Ms. Julie Warren, also of the Superfund Section, and Mr. Brian Dawson, of APCP (Air Pollution Control Program), accompanied me. The purpose of the trip was for me to familiarize myself with the site, and to determine if access to the site had been restricted, as requested of DESE (Division of Elementary and Secondary Education) by MDNR (Missouri Department of Natural Resources).

We arrived at the site around 11:15 a.m. The weather was cloudy and cold. We entered the middle building of the three buildings on the school property. We introduced ourselves and the purpose of our visit to Mr. Louis Buryn, the school administrator. He said that he had not been informed about the results of the sampling of the asphalt playground. From limited information, he had assumed that the risks posed by the site would be minimal. Mr. Buryn wanted to know what MDNR's involvement with the site had been. He was not aware that a letter was sent from the director of MDNR to DESE, stating that the MDNR and MDOH (Missouri Department of Health) were in agreement that access to the asphalt playground should be restricted to persons involved with site remediation. Ms. Warren and I briefly explained the Superfund process and the functions of each of our units, Site Evaluation and Project Management, in the state Superfund system.

Mr. Buryn led us to the asphalt playground. There was a distinct layer of a black tar-like substance visible between the concrete pad and the asphalt, extending into portions of the asphalt. Significant discoloration was noted throughout the rest of the asphalt playground. I asked Mr. Buryn if the tar "seam" was the result of the oozing tar. Mr. Buryn said yes, that the black layer between the concrete pad and the asphalt was the result of the oozing tar. I shot several photographs of this area. Mr. Buryn said that the tar has bubbled up in the spring of every year, since 1970, when the school was built. I asked if the concrete walkway was a former location of bubbling tar. Mr. Buryn said yes, that the concrete pad had been put in three years ago. I wanted to know if that was the date that the barrels (referenced in the Geotechnology report) were unearthed. Mr. Buryn said yes, that was true. I asked who had been involved with the project. Mr. Buryn said that Mr. Frank Conners, Maintenance Supervisor, and Mr. Ron Littich (DESE) were involved.

Ms. Warren and I asked when the playground was used. Mr. Buryn said that the physical education teacher used the playground in the spring and early fall, when the weather was warm. He said that the area was the site of kickball games and riding "Hot Wheels." Mr. Buryn said sometimes the children were taken to the grassy area on the eastern side of the asphalted area. No borings have been collected from the other playground area, located to the western side of the middle building, west of the asphalt playground.

We thanked Mr. Buryn for his time, and told him to call us if he had additional questions or concerns about MDNR's involvement with the site. Mr. Buryn said that he would discuss the situation with the physical education teacher, and restrict access to the playground in the future. I told Mr. Buryn that I would send him a copy of my PA (preliminary assessment) report.

JAB:so

c: Al Wallen, Superfund
Julie Warren, Superfund
Bob Eck, St. Louis Regional Office

BERT WHEELER STATE SCHOOL

PA/SI REFERENCE 31

STATE OF MISSOURI

DEPARTMENT OF NATURAL RESOURCES

MEMORANDUM

DATE: February 9, 1994

MEMO TO: Julie Bloss, Environmental Specialist, HWP, DEQ

FROM: Edith Starbuck, Geologist, Environmental Geology Section, DGLS

SUBJECT: ~~Hubert Wheeler State School Site~~

Enclosed is my report on the geologic and hydrologic considerations for the Hubert Wheeler State School Site in St. Louis City. The report addresses specific components of the HRS. Please let me know if you have any questions or comments, or need additional information.

3.0.1 General considerations

The Hubert Wheeler State School is located at 5707 Wilson Avenue in St. Louis. If normal survey sections are projected into this area, the location would be in the south half of section 19, T.45 N., R.7 E. This is an urbanized area with a long history of disturbance by man. This area was mined for coal and clay beginning in the middle part of the 19th century (Ref. 1). Areas nearby the site were used for landfilling operations (Ref. 2), and, of course, urbanization has brought modifications to drainages (Ref. 3). Little deep boring information is available. Some shallow borings have been made to investigate the tar seeps in the play yard.

3.0.1.1 Groundwater target distance limit

The groundwater target distance limit is 4 miles. There are no aquifer discontinuities within 4 miles of the site. See section 3.0.1.2.2, Aquifer discontinuities.

3.0.1.2 Aquifer boundaries

Fill material is known to directly underlie the site to a depth of 5 to at least ten feet (Ref. 2, Appendix B). The fill is reported to be made up of various colored clay or silty clay with brick, gravel and cinders (Ref. 2, Appendix B).

A layer of silty clay loess covers the uplands in this area (Ref. 4, p. 15). However, near drainages, this layer of loess is eroded away. The thickness of the loess may vary from 0 to 60 feet within the target area (Ref. 4, p. 15), but is assumed to be from 0 to 20 feet thick near

the site (Ref. 5, p. 256, 258, 260). Borings at the site have shown that there is some of this material at the site, but its thickness is unknown (Ref. 2, Appendix B). This unit is not known to produce water in this area, and is generally believed to be too clayey to produce a usable quantity of water.

Shales, clays, sandstones and coals of the lowest Cherokee Group (Pennsylvanian) underlie the loess. The coals and clays of this unit are known to have been mined very near the site (Ref. 1). Considering the lack of precision used in locating mines of this era (Ref. 5), and the apparent density of mining in this area, it seems likely that the site is undermined (Ref. 13). Descriptions of some shafts for nearby mines indicate that the Pennsylvanian is approximately 50 to 60 feet thick (Ref. 5, p. 256, 258, 260). The Pennsylvanian rocks of the St. Louis area "are relatively impermeable and yield very little water to wells" (Ref. 6, p. 12). This would be especially true in this area where it is so thin. An exception to this may be the possible production of water from mine voids, where potential yield has been artificially enhanced. This source of water is not known to have ever been used in this area, and quality of water is uncertain.

The aquifer of concern at this site is made up of a sequence of limestones of various compositions, ranging from clayey to sandy to cherty. These limestones are Mississippian in age. This system includes, in descending order: the Ste. Genevieve Limestone, St. Louis Limestone, Salem Formation, Warsaw Formation, Burlington-Keokuk Limestone, Fern Glen Formation, and Chouteau Group (Ref. 6, p. 8). Thin shales in this sequence are not considered reliable aquitards (Ref. 6). Thin shales, sandstones and limestones of the Devonian and Silurian Systems may also be present at a depth of approximately 775 to 800 feet (Ref. 7, #2460). The shallowest reliable aquitard is the Maquoketa Shale at the top of the Ordovician System (Ref. 6). Its depth is estimated at 810 to 820 feet (Ref. 7, #2460). Below this depth, groundwater is expected to be too mineralized to be potable. Mineralized groundwater probably occurs at shallower depths (Ref. 8.) Yields of fresh water from the Mississippian are expected to be small (Ref. 6, fig. 11).

Not enough information is available to determine direction of deep groundwater movement in this area. Groundwater gradients within the loess or Pennslyvanian bedrock probably reflect the general topography (Ref. 9).

3.0.1.2.1 Aquifer interconnections

The Mississippian aquifer is the only aquifer of concern at this site. The mining that occurred within the Pennsylvanian bedrock occurred near its base, (Ref. 5) so that void space produced is near the top of the Mississippian aquifer, providing possible interconnections with the surface.

3.0.1.2.2 Aquifer discontinuities

No geologic structures are noted on geologic maps of the area (Ref. 10 and 11). The nearby River des Peres probably transects both the loess and the Pennsylvanian bedrock within the target area, but the Mississippian aquifer is not transected by any feature.

3.0.1.3 Karst aquifer

The Ste. Genevieve, St. Louis, Salem and Burlington-Keokuk formations all exhibit karst features within the St. Louis area where they occur near the surface (Ref. 4). Sinkholes are noticeable on the topographic map of the Webster Groves Quadrangle less than two miles southwest of the site. This is an area where the Ste. Genevieve Limestone directly underlies surficial soils. Topographic depressions nearer to the site can be attributed to mine collapses. It seems unlikely that the Mississippian limestones that still retain a cover of Pennsylvanian shales and clay have been greatly affected by solutioning. However, it is possible that enlarged solution channels exist beneath the site (Ref. 4, fig. 4). Small sinkholes appearing on the Clayton 7.5' topographic quadrangle within the area of Pennsylvanian cover indicate that there may be some solutioning of the underlying Mississippian limestone. The aquifer should be considered karst.

3.1 Likelihood of release

No observed release has been demonstrated, therefore, potential to release will be evaluated.

3.1.2 Potential to release

3.1.2.2 Net precipitation

The net precipitation factor value for the site is 3 (Ref. 12, figure 3-2).

3.1.2.3 Depth to aquifer

Though the topography immediately surrounding the site could only questionably be considered karst, karst features do occur within the aquifer in the target area and the aquifer is being considered karst (See section 3.0.1.3). For a karst aquifer, a depth of 0 is automatically assigned (Ref. 12, p. 51600). The depth to aquifer factor value is 5 (Ref. 12, fig. 3-5).

3.1.2.4 Travel time

Contamination has been found extending to a depth of 8 to 10 feet below ground surface, or to the top of the loess (Ref. 2, p. 4). The silty clay of the loess and the shales and clays of the Pennsylvanian are all relatively impermeable. The cumulative thickness of the clay above the top of the Mississippian may be up to 50 feet (Ref. 5), however, it is likely that about ten feet of this clay is mined out, leaving a void (Ref. 13). The clay that was removed was probably the least permeable in the sequence. Most of the clay, especially the loess will be somewhat silty. The assigned hydraulic conductivity is 10^{-6} (Ref. 12, table 3-6). The travel time factor value is 15 (Ref. 12, table 3-7).

3.3.1 Nearest well

No drinking water wells are known to exist within the target area. The only recently drilled wells within the target area were drilled for a heat pump system. Historic wells were all drilled prior to 1945, and are assumed to no longer be in use.

3.3.3 Resources

Yields of fresh water from the Mississippian aquifer would probably be quite small, but should be adequate to supply a household (Ref. 6, Ref. 8). Very little data is available.

3.3.4 Wellhead Protection Area

There is no wellhead protection area within the target area.

4.1 Overland/flood migration component

4.1.1 General considerations

Natural drainages in the area have been highly modified due to urbanization (Ref. 3). River des Peres was once a Mississippi River tributary meandering through the city of St. Louis. As the city grew, the river channel was straightened and the river bed paved. It is now the main channel for the St. Louis City storm sewer system (Ref. 3).

4.1.1.1 Definition of hazardous substance migration path for overland/flood migration component

Runoff from the site travels overland to the north and east for approximately 400 feet until it reaches a storm sewer drain west of Sublette Drive and south of I-44. This drain is estimated to be 1500 feet from the River des Peres drainage (Ref. 15). The site is approximately nine miles from the confluence of the River des Peres with the Mississippi River. This confluence is near the Mississippi River mile marker 172. The termination of the overland/flood migration pathway would be at approximately the 166 mile marker.

4.1.1.2 Target distance limit

The termination of the target distance is at approximately the 166 Mississippi River mile marker.

4.1.2.1.2.1 Potential to release by overland flow

4.1.2.1.2.1.2 Runoff

The site is located on a small topographic prominence. The drainage area is less than 50 acres. The drainage area value is 1 (Ref. 12, table 4-3).

The play yard is partly paved with asphalt and partly grass. Runoff from these two areas will differ markedly. Typically, urban areas have a high runoff rate, due to the large areas of paved streets, parking lots and sidewalks. A soil group designation of D would be appropriate (Ref. 12, table 4-4).

The 2-year, 24-hour rainfall for the site is 3.5 inches (Ref. 16) . The rainfall/runoff value is 6 (Ref. 12, table 4-5).

The runoff factor value is 1 (Ref. 12, table 4-6).

4.1.2.1.2.1.3 Distance to surface water

The distance to surface water is estimated at 1900 feet. The distance to surface water factor value is 9 (Ref. 12, table 4-7).

4.1.2.1.2.2 Potential to release by flood

The site is not located in a floodplain. The flood frequency factor value is 0 (Ref. 12, table 4-9).

REFERENCES

1. Underground Coal and Clay Mines in the City of St. Louis, Missouri; Mimi Garstang, DGLS, 1987.

2. Subsurface Assessment, Playground Site Restoration, Hubert Wheeler State School; Geotechnology, Inc.; November 30, 1993.

3. Memo to Kevin Kelly, HWP from Peter Price, DGLS dated August 11, 1992.

4. Engineering Geology of St. Louis County, Missouri; Edwin E. Lutzen and John D. Rockaway, Jr.; DGLS, 1971.

5. Clay Deposits; H.A. Wheeler; Missouri Geological Survey Volume XI, first series; 1896.

6. Water Resources, St. Louis Area, Missouri, Water Resources Report No. 30; Don E. Miller, et. al.; DGLS/USGS; 1974.

7. Well logs for the area on file at DGLS.

8. Groundwater Areas Map in Groundwater Maps of Missouri; Missouri Geological Survey and Water Resources; 1963.

9. Memo to Kerwin Singleton, DEQ from Myrna Reiff, DGLS dated May 18, 1988.

10. Geologic Map of St. Louis City and County, Missouri, K.G. Brill, DGLS, 1991.

11. Structural Features of Missouri; Mary H. McCracken; Report of Investigations No. 49; Missouri Geological Survey and Water Resources; 1971.

12. Federal Register, Vol. 55, No. 241.

13. Conversation with Mimi Garstang, Geologist, DGLS, on 1/14/94.

14. Well record database on file at DGLS.

15. Webster Groves 7.5' topographic map, United States Geological Survey, 1954, photorevised 1968 and 1974.

16. Rainfall Frequency Atlas of the United States, U.S. Department of Commerce Technical Paper No. 40.

Hubert Wheeler State School Site Stratigraphy			
Stratigraphic Unit	**Composition**	**Thickness (ft.)**	**Remarks**
Fill	Clay with brick, gravel and cinders	5 - 15	
Loess	Silty clay	0 - 20	
Pennsylvanian System	Shales, clays, sandstones, coals	50 - 60	Coal and clay mined
Mississippian System	Silty to sandy limestone, cherty limestone	900 +	Small yields of water at shallow depths

Record#	REFNUM	REC_TYPE	OWNER_LAST	USE	Q_3	SEC	TWN	RNG	TOTAL_DPTH
1	85240A	W	KOELLING		SE	16	44N	06E	170
2	00313A	W	PETERSON	D	SW	27	44N	06E	240
3	60452A	W	SMITH	D		31	44N	06E	430
4	41770A	W	OCHS	D	SE	33	44N	06E	315
5	83087A	W		O	NW	30	44N	07E	619
6	04853A	W	SUPPLY	F	NW		45N	06E	405
7	40464A	W		H	NW	06	45N	06E	245
8	10694A	W	HEARING CENTER	H	SW	26	45N	06E	375

Hubert Wheeler

Header Data

Log # 000121 Owner:BOEHLE LLE St:MO Cnty:ST. LOU.
C SW TRS: S16 T45N R07E
Alias: Lat.:
Type well:Private Well Long.:
Type log: S Quad:UNKNOWN
Driller:MORLEY-DICKINSON Date:12/1904
Driller License No: Confidential:N Release Dt. /
Logger:GLEASON Date: /

Elev.: 470 Elev.S Yield: 0 SWL:(a) H20 @:
T.D.: 650 base: DrDwn: 0 SWL:(b)

Bedrock at:9999 Samples saved:N Int. cored: 0 to 0
Top Fm.:RESIDUUM & TOP SOIL
Bot Fm.:SILURIAN SYSTEM
Problems:
Remarks:
More:MADE SOME OIL AND GAS, DRY HOLE

Construction Data

Log #:000121 Date Completed:12/1904

CASING: Dpth: 63 Diam: 6.00 I/O:O Sz. Hole: 0.00 Sz. Below: 0.00
0 0.00
0 0.00
0 0.00

GROUT:	Type	Rig	Methd	Dt Abnd	Plug Date	Top	Bottom
				/	/	0	0

P:	Cap	Type	Set at	TDH	Scrn Typ	Size	Lgth	Slot
	0		0	0		0	0	0

Well	Treat	Type Dev	Typ Compl	Perf. Interval	Tube	Pres.	Oil	Gas
				Top: 0 Bot: 0				

Open Top:RESIDUUM & TOP SOIL
Formations Bot:SILURIAN SYSTEM
Other data sources:
Remarks:

Stratigraphy Data

Log #:000121

Top	Base	Name	--Lith-- Pr	Sc	Mn	Minerals--- Pri	Oc	Sec	Oc	Mnr	Oc
0	60	RESIDUUM & TOP SOIL	LS	SD			0		0		0
60	120	ST LOUIS LIMESTONE	LS	CH			0		0		0
120	200	SALEM FORMATION	LS	CH			0		0		0
200	280	WARSAW FORMATION	LS	SH			0		0		0
280	510	KEOKUK-BURLINGTON LS. UNDIFF	LS	CH			0		0		0
510	565	FERN GLEN FORMATION	LS	CH			0		0		0
565	600	CHOUTEAU GROUP	LS				0		0		0
600	650	SILURIAN SYSTEM	LS	DL	CH		0		0		0

Printed on 12/30/93 at 10:43:57.

A07772-00

MISSOURI DEPARTMENT OF NATURAL RESOURCES
DIVISION OF GEOLOGY AND LAND SURVEY
WATER WELL RECORD 12

MAIL CANARY COPY TO:
WELL DRILLER'S FUND
P.O. BOX 250
ROLLA, MISSOURI 65401
ENCLOSE $15.00 WATER WELL CERTIFICATION FEE WITHIN 60 DAYS AFTER WELL COMPLETION.

DO NOT FILL IN
STATE WELL NO.
OTHER NO. 456161

RECEIVED DEC 20 1988

OWNER
NAME Hydro-Source
St Louis Hearing - Speech Center
ADDRESS 6731 Manchester Rd St. Louis, Mo 63139
9536 Manchester Rd St. Louis Mo 63139

DRILLING CONTRACTOR
NAME Imperial Drilling Co.
ADDRESS Festus, Mo. 63028 296-2664

LOCATION AND DATE
MILEAGE AND DIRECTION FROM NEAREST TOWN OR HIGHWAY 2 miles west of Maplewood
DATE COMPLETED 12/15/88

PROPOSED USE OF WELL
☐ DOMESTIC ☐ PUBLIC WATER SUPPLY ☒ HEAT PUMP ☐ OTHER (SPECIFY)
☐ MULTIPLE FAMILY ☐ NON-COMMUNITY ☐ IRRIGATION

DRILLING EQUIPMENT
☐ MUD ROTARY ☐ REVERSE ROTARY ☒ AIR ROTARY ☐ CABLE TOOL ☐ OTHER (SPECIFY)

CASING DETAILS
DEPTH (FT.) 20½ | DIAM. (IN.) 6" | WEIGHT/FT. OR SCHEDULE 40
SPACER GUIDES USED ☐ YES ☒ NO
JOINTS ☒ GLUE ☐ THREADED ☐ WELDED
DRIVE SHOE ☐ YES ☒ NO
MATERIAL ☐ STEEL ☒ PLASTIC ☐ OTHER

GROUTING DETAILS
TYPE OF SEAL ☐ FULL LENGTH ☐ TOP ☒ BOTTOM
MATERIAL USED ☐ NEAT CEMENT ☒ BENTONITE
DEPTH OF SEAL TOP 80 ft BOTTOM
SACKS OF CEMENT OR BENTONITE USED TOP 14 FULL LENGTH BOTTOM
DRILLING SUSPENDED 72 HRS. AFTER GROUTING ☐ YES ☐ NO

SCREEN DETAILS
MAKE
LENGTH OPEN TO AQUIFER (FT.)
SLOT SIZE | DI
AMETER OF WELL INCLUDING GRAVEL CK (IN.)
GRAVEL SIZE (IN.) FROM (FT.) TO (FT.)

Heat hole. Pump.

YIELD TEST
☐ BAILED ☐ PUMPED
LD (GPM)

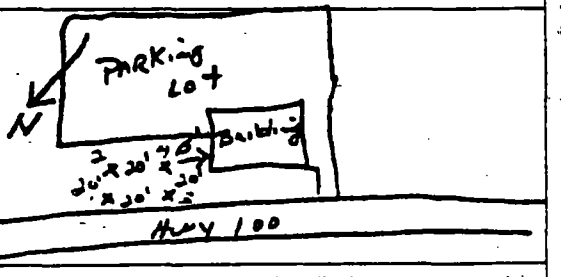
WATER LEVEL
MEASURE FROM LAND STATIC (FT.)
(FEET) HOURS
DEPTH OF COMPLETED WELL IN FEET BELOW GROUND SURFACE 375' 3 250

COMPLETION DATA
PUMP CAPACITY AT SETTING FEET
WELL DISINFECTED
ER DRILLING ☐ YES ☐ NO
AFTER SETTING PUMP ☐ YES ☐ NO
IS THERE AN ABANDONED WELL? ☐ YES ☐ NO
WAS IT PROPERLY SEALED? ☐ YES ☐ NO

DEPTH FROM LAND SURFACE FEET	TO FEET	FORMATION DESCRIPTION	DIAM. OF DRILL HOLE
0	19	clay.	8⅞
19	23	clay ? rock	↓ 6"
23	26	opening	
26	28	Rock ? clay	
28	220	Lime some shaley Lime some shale stringers	
220	278	sandy Lime with chalo partin	
278	348	shale some shaley Lime	
348	375	Lime	

LOCATION OF WELL (SHOW LOCATION IN SECTION PLAT)
COUNTY St. Louis
NE ¼ SW ¼ SEC. 26
T 45 N, R 6 E W
TOTAL DEPTH 375' 3 250'
ELEV.

Sketch exact location of well with distances to at least two permanent landmarks. Also show abandoned well.



IF YIELD WAS TESTED AT DIFFERENT DEPTHS DURING DRILLING, LIST BELOW

FEET		GALLONS PER MINUTE
#1	250'	20½ PVC
#2	250'	—
#3	375'	—
#4	250	—

NOTES: Drilled 4 holes 3 - 250' 1 - 375'
Closed Loop System set 1½ Pipe Back Fillen w/ Sand 0 50' Top 80' Fill with Bentonite

I hereby certify that the well herein described was constructed in accordance with Department of Natural Resources requirements for construction of the type of water supply indicated above.

SIGNATURE (PERMITTEE) Gerald Bundtzy DATE 12/15/88

SIGNATURE (WELL OWNER) DATE

PERMIT NO. B-00028 A-00049

MO 780-0230 (4-87) DISTRIBUTION: WHITE/DRILLER'S COPY CANARY/SEE AT TOP OF PAGE PINK/WELL OWNER

X E B 4

MISSOURI DEPARTMENT OF NATURAL RESOURCES
DIVISION OF GEOLOGY AND LAND SURVEY

WATER WELL RECORD

MAIL CANARY COPY TO WELL DRILLER'S FUND
P.O. BOX 250
ROLLA, MISSOURI
ENCLOSE $15.00 WATER WELL CERTIFICATION FEE WITHIN 60 DAYS AFTER WELL COMPLETION.

DO NOT FILL IN
STATE WELL NO A03371-CJ
OTHER NO 458675

OWNER — NAME: Southwest Parts Supply — ADDRESS: 6346 Plymouth, Wellston, MO 63133

DRILLING CONTRACTOR — NAME: St. Charles Drilling Company — ADDRESS: 6349 Old Hwy 94 South, St. Charles, MO 63303

LOCATION AND DATE — MILEAGE AND DIRECTION FROM NEAREST TOWN OR HIGHWAY: Page to Sutter to Plymouth — DATE COMPLETED: 11-11-87

PROPOSED USE OF WELL
☐ DOMESTIC ☐ INDUSTRIAL ☐ AIR CONDITIONING ☐ TEST WELL (SEALED AFTER ABANDONED) ☐ YES ☐ NO
☒ BUSINESS ESTABLISHMENT ☐ FARM ☐ IRRIGATION ☐ OTHER (SPECIFY)

DRILLING EQUIPMENT
☐ MUD ROTARY ☐ REVERSE ROTARY ☒ AIR ROTARY ☐ CABLE TOOL ☐ OTHER (SPECIFY)

CASING DETAILS

DEPTH (FT.)	DIAM. (IN.)	WEIGHT/FT. OR SCHEDULE	SPACER GUIDES USED	JOINTS	DRIVE HOLE	MATERIAL
85	6 5/8	13#	☐ YES ☒ NO	☐ THREADED ☒ WELDED	☐ YES ☒ NO	☒ STEEL ☐ PLASTIC ☐ OTHER

GROUTING DETAILS
TYPE OF SEAL: ☒ FULL LENGTH ☐ TOP ☐ BOTTOM
MATERIAL USED: ☐ NEAT CEMENT ☒ BENTONITE
DEPTH OF SEAL: TOP ____ BOTTOM ____
SACKS OF CEMENT OR BENTONITE USED: TOP ____ FULL LENGTH ____ BOTTOM ____
DRILLING SUSPENDED 72 HRS. AFTER GROUTING: ☐ YES ☒ NO

SCREEN DETAILS
MAKE: ____ LENGTH OPEN TO AQUIFER (FT.): ____
SLOT SIZE: ____ DIAM (IN.): ____ IF GRAVEL PACKED: DIAMETER OF WELL INCLUDING GRAVEL PACK (IN.): ____ GRAVEL SIZE (IN.) FROM (FT.) ____ TO (FT.) ____

YIELD TEST
☐ BAILED ☒ COMPRESSED AIR ☐ PUMPED
HOURS: 1/2 YIELD (GPM): 3+

WATER LEVEL
MEASURE FROM LAND SURFACE - STATIC (FT.): (Artesian) 0ft
DURING YIELD TEST: N/A (FEET) AFTER ____ HOURS
DEPTH OF COMPLETED WELL IN FEET BELOW GROUND SURFACE: 405

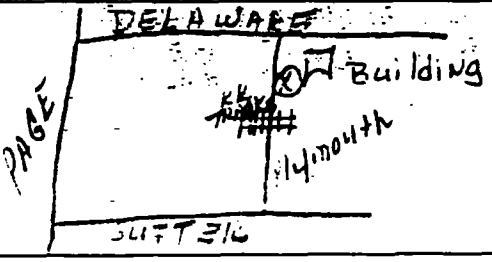
COMPLETION DATA
PUMP CAPACITY AT SETTING: 10 GPM, ____ TDH, 380 FEET
TYPE OF TOP CASING SEAL: Pitless Adapter & Well Seal
WELL DISINFECTED: AFTER DRILLING ☒ YES ☐ NO; AFTER SETTING PUMP ☒ YES ☐ NO
IS THERE AN ABANDONED WELL? ☐ YES ☒ NO
WAS IT PROPERLY SEALED? N/A ☐ YES ☐ NO

DEPTH FROM LAND SURFACE FEET	TO FEET	FORMATION DESCRIPTION	DIAM. OF DRILL HOLE
0	35	Loose-Ground	8 5/8
35	85	Lime	8 5/8
85	100	Lime	6 1/8
100	105	Lime	6 1/8
105	125	Lime	6 1/8
125	405	Lime	6 1/8

04/26/88 dlh

LOCATION OF WELL (SHOW LOCATION IN SECTION PLAT) COUNTY S. Louis
SW ¼ NW ¼ SEC. ____ T 45N N, R 5E E W
TOTAL DEPTH 405
ELEV. 520

Sketch exact location of well with distances, to at least two permanent landmarks. Also show abandoned well.



IF YIELD WAS TESTED AT DIFFERENT DEPTHS DURING DRILLING, LIST BELOW

FEET	GALLONS PER MINUTE
100-105	2
385-390	1

I hereby certify that I directed that the well herein described be constructed in accordance with Department of Natural Resources requirements for nonpublic water supply wells.

SIGNATURE (WELL OWNER) ____ DATE ____

I hereby certify that the well herein described was constructed in accordance with Department of Natural Resources requirements for construction of nonpublic water supply wells.

SIGNATURE (WELL DRILLER) ____ DATE 2-19-88

PERMIT NO. A00152

MO 780-0230 (1-87) DISTRIBUTION: WHITE/DRILLER'S COPY CANARY/SEE AT TOP OF PAGE PINK/WELL OWNER

16

BP

ENGINEERING GEOLOGIC REPORT OF SURFACING TAR

ST. LOUIS COUNTY, MISSOURI

LOCATION: SE of the junction of Natural Bridge and Kingshighway in the Handy Park Area, T. 45 N., R. 6 E., Clayton-Granite City Quadrangles.

At the request of the St. Louis Regional Office, DEQ, and Vivian West, 3326 York Court, St. Louis, MO 63115, an investigation of the occurrance of tar in the backyards of several dwellings in the York Court area was made. Entrance to the West backyard was not made but the residents at 3320 York Court allowed an examination of conditions in their yard. Numerous instances of tar were located alongside the house as well as in the backyard that had the appearance of coming from the subsurface. In addition, a considerable quantity of the same type of material was present in the NE corner of Handy Park along Lexington Avenue.

A topographic survey of the City of St. Louis in the fall of 1889 indicates that the area between Lexington and Ashland, east of Kingshighway and bounded on the east by Marcus Avenue was a old mining area or a collapse system in the St. Louis limestone formation.

York Court, particularly the north-south segment crosses this old depressed area. Handy Park is over the top of the largest and deepest portion of the old collapse or depressed area. Evidently, substantial quantities of fill material was placed in this old collapse or depressed area prior to construction of the homes along Lexington, York Court and Ashland. Some 40 to 60 feet of material evidently was placed in the area under York Court with the fill approaching 120 to 130 feet in the Handy Park Area. It is anticipated that through the course of time, settlement of the fill is causing materials that are mobile or fluid to rise to the surface slowly.

The tar like substance at the ground surface may well represent tars and other residues from demolition debris placed in the collapse area as fill material prior to construction of the homes in that area thought to date pre-World War II. Our photographic library does not go back sufficient in time to determine the date of filling of the sinks or depressed area.

There does not appear to be a ready solution to the problem of the surfacing tar like substance except to remove it if it becomes a nuisance. The quantities of material placed into the relatively thick fill, of course, is not known. It is anticipated, however, that the problem will continue to occur or re-occur. The chemical significance of the material is unknown by this office.

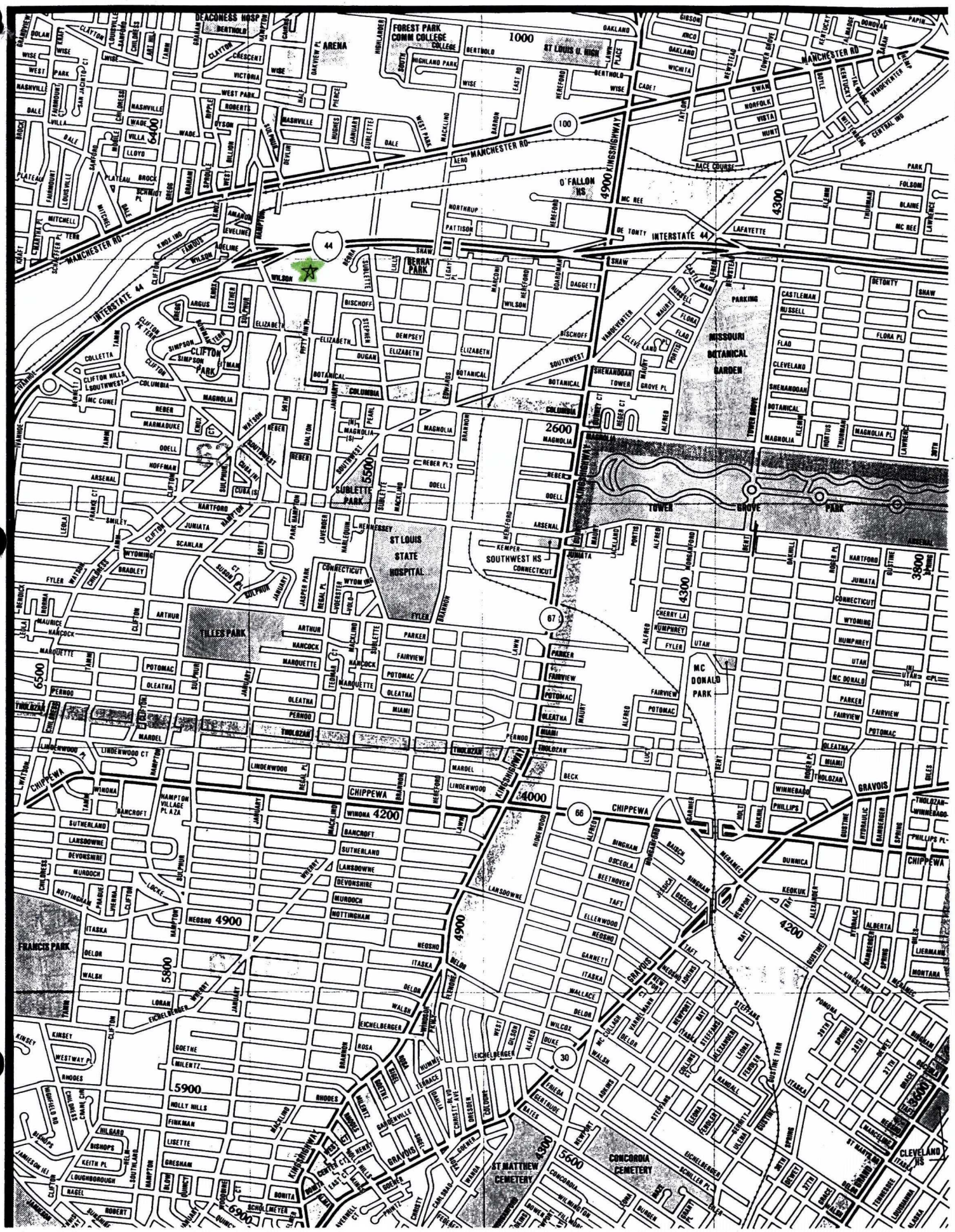
Thomas J. Dean, Geologist
Engineering Geology Section
Geology & Land Survey
December 7, 1982

orig: Vivian West
3326 York Court
St. Louis, MO 63115
cc: Betsy Kenarian, DEQ

Scale 1 inch = 2000 feet

L K Joins Page 26 J

1 inch = 3 miles




ST PETERS CEMETERY
GREENWOOD CEMETERY
US GOVERNMENT
NORMANDY H S
Hillsdale
BETHANY CEMETERY
HALTER HS
SHERMAN PARK
MARTIN LUTHER KING DR
PENROSE PARK
MANDY PARK
VISITATION PARK
ST LOUIS REGIONAL MEDICAL CENTER
SOLDAN HIGH SCHOOL
FOREST PARK PKWY
GOLF COURSE
JEFFERSON MEMORIAL
Forest Park
ART MUSEUM
MUNY OPERA
STEINBERG RINK
JEWEL BOX
ZOO
SCIENCE
BOONE EXP
KINGSHIGHWAY
GOODFELLOW
NATURAL BRIDGE
PAGE BLVD
UNION BLVD
LINDELL
DELMAR
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WEST PINE PLACE
BUCKINGHAM CT
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FOREST PARK
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MC KINLEY
SCOTT
BUCKEYE
CLAYTON
DANIEL
SARPY
TOWER GROVE
BOTTLE
NEWSTEAD
TAYLOR
WHITTIER
MC PHERSON
PERSHING
WATERMAN
DES PERES
ROSEDALE
SKINNER
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SALEMAN
LUCAS HUNT
CHARLES ROCK RD
MAIN
CROSS
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SITTY SEVENTH
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LINDELL
FOREST PARK PKWY
DELMAR

JOHN ASHCROFT
Governor

EDERICK A. BRUNNER
Director

STATE OF MISSOURI
DEPARTMENT OF NATURAL RESOURCES

Division of Energy
Division of Environmental Quality
Division of Geology and Land Survey
Division of Management Services
Division of Parks, Recreation, and Historic Preservation

MEMORANDUM

DATE: May 18, 1988

TO: Kerwin Singleton, DEQ

FROM: Myrna Reiff, Geology and Land Survey MR

SUBJECT: St. Louis Lead and Oil Co./National Lead Chemical/ National Lead Ind. PA/SI

Enclosed is the hydrogeologic information needed to complete the Documentation Records for Hazard Ranking System report.

The site is in a heavily urbanized area with gentle slopes. The natural surface drainage has been altered by development and is now controlled by an artificial drainage system. Most of the information for this site was obtained from records at our office because of the difficulty of doing field work in this setting.

Thick loess deposits cover the uplands in this area. At the site, however, most of all of the loess has been removed by the River des Peres. The natural material present at the site is obscured by fill material composed of soil, brick, and rubble. Below the fill material, some clay-rich loess may be present above alluvium and Mississippian residuum. The permeability of the fill material, alluvium and Mississippian residuum is moderate to high while it is low in the clay rich loess layer.

Because the site is located in the River des Peres valley at a lower elevation than the area to the north and south of the site Pennsylvanian-aged cyclic deposits are expected to be missing below the site, a result of erosion by the ancestral River des Peres. Pennsylvanian aged deposits are known to exist north and south of the site as documented by clay and coal mining which has occurred in the past (see Figure 1). Upper Mississippian limestone bedrock is expected approximately 30 feet below the surface of the site. The Mississippian limestones are a better water source than Pennsylvanian deposits, but even the Mississippian groundwater is marginal in quality, and below about 450' the groundwater is non-potable.

This is not an area of deep groundwater recharge. The River des Peres drainage is a natural groundwater discharge, and so precipitation percolating through the fill would be expected to recharge shallow groundwater. A report of an investigation by Horner and Shifrin, Inc., written in the late 1960's (enclosed) suggests that the groundwater gradient slopes toward the River des Peres Valley. The groundwater gradient on the north side of the valley, under the site, should also slope toward the River des Peres Drainage Channel.

PAGE 1

Location: 5548 Manchester, St. Louis Missouri,
Lat. 38°37'24", Long. 90°16'35", Webster Groves Quadrangle,
The City of St. Louis (Reference 2)

PAGE 2

Name/description of aquifer(s) of concern:

The main aquifer of concern is the Upper Mississippian regional aquifer. In the St. Louis area, this aquifer consists of limestone and sandstone. (Reference 3) The aquifer extends from approximately 30 feet below the surface to a depth of 500 feet. There are no confining beds in this interval and the entire sequence is considered to be hydrologically interconnected. Immediately below the Upper Mississippian limestone formations is a relatively thick unit of shale and shaley limestone which acts as an aquitard. (Reference 1)

Depths from the ground surface to the highest seasonal level of the saturated zone [water table(s)] of the aquifer of concern:

An estimate of the depth from the ground surface to the water table would be at the top of the Mississippian bedrock approximately 30 feet. (Reference 1)

PAGE 3

Soil type in unsaturated zone:

fill (rubble, brick)
loess (clay rich)
alluvium
Mississippian Residuum (Reference 4, 6, 9)

Permeability associated with soil type:

fill estimate 10^{-3} to 10^{-5} cm/sec.
clay rich loess 10^{-7} cm/sec.
alluvium and residuum 10^{-5} to 10^{-7} cm/sec. (Reference 7)

PAGE 6

Average slope of facility in percent:

1.7% (Reference 8)

Name/description of nearest downslope surface water:

Facility located in heavily urbanized area. Surface drainage via storm sewers. Nearest downslope surface water is the River des Peres Drainage Channel. (Reference 4, 8)

Average slope of terrain between facility and above-cited surface water body in percent:

Estimate 2% (Reference 8)

Is the facility located either totally or partially in surface water?

No. (Reference 4, 8)

Distance to nearest downslope surface water:

500 feet south to the River des Peres. (Reference 4, 8)

REFERENCES

Reference #	Description of Reference
1	Water well logs in the vicinity of National Lead Ind. on file at DGLS in Rolla.
2	Webster Groves, Clayton, Cahokia and Granite City 7 1/2' Topographic Maps with water well locations.
3	Groundwater Areas in Missouri Map, by Robert D. Knight, from "Groundwater Maps of Missouri", a DGLS publication, 1963.
4	Observations made during site visit of M.L. Reiff on March 15, 1988.
5	"Investigation of the Placement of Clay Slurries into the Abandoned Clay Mine below Midge Berra Park" by Horner and Shifrin, Inc., St. Louis, Mo. 1969.
6	Engineering Geology of St. Louis County, Missouri Engineering Geology Series #4, Missouri Geological Survey.
7	Uncontrolled Hazardous Waste Site Ranking System, A Users Manual, June 1982, the MITRE Corp.
8	Webster Groves 7 1/2' Topographic Map.
9	Personal knowledge of M.L. Reiff with stream deposits and weathering processes.

HORNER & SHIFRIN, INC.
CONSULTING ENGINEERS
5200 OAKLAND AVENUE
ST. LOUIS, MO. 63110
AREA CODE 314 531-4320

March 6, 1970

MAR 09 1970

Dr. William C. Hayes
State Geologist and Director
Division of Geological Survey and Water Resources
Buehler Park
Rolla, Missouri 65401

Dear Dr. Hayes:

This letter will confirm our phone conversation today when I explained that a public hearing has been called for March 24, 1970 by the City of St. Louis to determine what opposition there might be to the use of an abandoned clay mine in the South-Central part of the City for disposal of clay slurry waste by the National Lead Company. Since there may be questions regarding the project, you should be prepared to reiterate the Survey's position regarding the use of the subsurface for this project.

Mr. George Sallwasser and I will represent our office at the hearing which is set for 11:00 AM at City Hall. It is expected our involvement will not extend beyond early afternoon. As I mentioned on the phone, it would be well if you could come to our office at about 10:00 AM so that we may discuss the project and attend the hearing together.

Sincerely yours,

Donald C. Lochmoeller

DCL:rk

June 23, 1969

Mr. Jack K. Smith
Executive Secretary
Missouri Water Pollution Board
P. O. Box 154
Jefferson City, Missouri 65101

Dear Mr. Smith:

Mr. James Williams, chief, engineering geology section and I have carefully examined and discussed National Lead Company's application for disposal of clay slurry.

From the data presented, we believe the slurry will be essentially inert and will not "pollute" the groundwater in the area which is already rather high in sulfate content.

A fine clay slurry entering the gravel, sand, and silt of the River Des Petes alluvium may seal the alluvium and diminish the potential volume of waste that may be disposed of. If this sealing should be selective as to certain areas, either larger amounts of water will be channeled into other areas or the general ground water level may be caused to rise.

It is recommended that the water level be monitored by using one of the existing test holes for an observation well; and - if at all feasible - by the installation of an observation well near the River Des Peres downslope (of the water table) from the disposal area. Injection under forced pressure should not be employed.

It is suggested that surface observation be conducted periodically in the vicinity of the old mine entry. Presence of increased water may lead to the location of the opening.

It is our opinion that approval of this application would be in the best interest of the State.

Sincerely,

William C. Hayes
State Geologist and Director

WCH:cs

BASIN OFFICES

Room 449, State Office Building
615 East 13th Street
Kansas City, Missouri 64106
Telephone 816 274-6675

8450 Watson Road
St. Louis, Missouri 63119
Telephone 314 849-1313

James A. Dunn
Special Assistant
Attorney General

MISSOURI WATER POLLUTION BOARD
THE DEPARTMENT OF PUBLIC HEALTH AND WELFARE
112 WEST HIGH, P. O. BOX 154
JEFFERSON CITY, MISSOURI 65101
TELEPHONE 314 635-9117

10.8 St. Louis County
National Lead Company

U. S. Atomic Energy Comm.

June 17, 1969

Dr. William C. Hayes
State Geologist
Division of Geological Survey
and Water Resources
P.O. BOx 250
Rolla, Missouri 65401

Attached is information concerning there request to dispose of certain inert clay slurries in an abandoned mine under Berra Park in St. Louis, Missouri.

Please make your customary survey of the abandoned mine and furnish us with a report of your findings at your earliest convenience.

Jack K Smith

Jack K. Smith
Executive Secretary
Missouri Water Pollution Board

JKS/fw

Enclosure

APPLICATION

(A) National Lead Company respectfully requests the Water Pollution Board of Missouri, under authority vested in it by Section 204.030 R.S.Mo. 1959 to issue to National Lead Company a permit for the construction of a system for the disposition of certain natural inert clays which are a portion of the clays used in manufacturing processes at its plant located at 5548 Manchester Avenue, St. Louis, Missouri, which clays are not toxic, nor odorous, nor noxious, nor in any wise detrimental to the public health, recreation, nor to ecology, agriculture, or industrial endeavor of any kind. The purpose of this request is to permit applicant to cooperate with and aid the Metropolitan St. Louis Sewer District in the operation of its facilities.

(B) The system is to be constructed under the right of way of the St. Louis-San Francisco Railroad immediately adjacent to and south of the aforesaid Manchester Avenue plant, thence across the River Des Peres Drainage Works right of way, thence under and along the Macklind Avenue bridge and along the east line of Macklind Avenue southerly to its intersection with the south line of Shaw Avenue, thence westwardly along the said south line of Shaw Avenue to a point thereon marked (a) on the attached plat numbered 1; thence south into Berra Park to a point marked (b) on the aforesaid plat. All of the aforesaid Berra Park and Macklind Avenue and the bridge thereon are owned and controlled by the City of St. Louis. It is believed that the River Des Peres Drainage Works right of way is vested in the Metropolitan Sewer District.

(C) The system will function so as to discharge the natural inert clays while suspended in water, into the residual voids of chambers of an abandoned clay mine located beneath Berra Park, which clay mine has heretofore been owned by the applicant. The clay bearing water will fall freely by gravity through an existing hole in the park into a chamber of the abandoned mine where it will comingle with water which fills a portion of the voids.

(D) An analysis of the quality of the water now in the aforesaid mine area indicates it to be of the following quality:

pH	6.6
Phen. Alk, mg/l $CaCO_3$	0
Total Alk, mg/l $CaCo_3$	387
Chloride, mg/l	68.9
Iron, ppm	420
Manganese, ppm	60
Sulfates, mg/l	1,580
Hardness, mg/l as $CaCo_3$	1,998

(E) The geologic formations underlying the site are detailed on Plate 2 attached.

(F) The quantity of clay bearing water estimated to be poured into the abandoned mine is 45,000 gallons per day.

(G) Competent engineering advice and opinion of our consultants, Horner & Shifrin, indicate that if the inert natural clays to be poured into the chamber do not have the effect of stopping the natural water flow through surfaces of the residual chambers, the voids will prove wholly adequate to accommodate the entire contemplated discharge indefinitely.

The same advice indicates that should the clays have the effect of sealing the surfaces of the chambers so as to elevate significantly the level of the present water in the subterranean chambers, the system will be closed down and another method of disposition sought.

(H) The characteristics of the water contemplated to be poured into the abandoned mine chamber are:

pH	9.3
P. Alk	75 mg/l
Total Alk	650 mg/l

The characteristics of the solids in the water will generally be as follows:

Quartz, Mica & Feldspar	55%
SiO_2	30%
Al_2O_3	10%
Other inert solids	5%

(I) The quality of the present water in the abandoned mine chamber as detailed in Paragraph (D) above indicates that the addition of the inert natural clays and water would not and could not "cause pollution" of the present waters within the meaning of Section 204.030 R.S. Mo. 1959. The analysis shows that these waters are unfit presently for any use in connection with agriculture, horticulture or recreation or the support of wild life or ecology.

The zoning of the area by the City of St. Louis prohibits the use of land for dwelling purposes.

A visual examination of the area and an examination of the municipal records with respect thereto indicates that there are not now any wells or cisterns or similar water reservoirs in the area which could be affected by the system.

The pouring of the water-borne inert natural clays into the present contaminated waters would not have the effect of degrading their quality nor rendering them unfit for any use to which they now are or might be devoted. There is substantial competent opinion that the addition of the clays might have the effect of improving the present quality of the water.

In addition, there is competent and substantial engineering opinion in support of the construction of the system and the issuance of the permit therefor to the effect that the addition of the inert natural clays into the abandoned chambers may contribute to the stabilization of the surface areas of the park and the surrounding area and, in addition, permit the Metropolitan Sewer District Treatment Plant to function more efficiently to accomplish the purposes for which it was designed and intended.

To this end, your granting of such a permit at the earliest convenience is most earnestly requested.

Yours very truly,

National Lead Company

C. B. Jackson

TABLE I

FIRST TEST

Day	Time	Water Meter Reading (cf)	Average Flow (gpm)	Feet to Water Surface from Top of Casing		
				Hole #1	Hole #2	Hole #3
9/6/68	10:15 AM	006098		53.1	50.8	50.0
			20.9			
	4:15 PM	007100			50.9	49.8
			18.6			
9/7/68	7:15 AM	009328			50.8	49.7
			27.4			
9/8/68	10:30 AM	015300			50.8	49.5
	12:30 PM		(hydrant shut down)			
9/9/68	7:40 AM	015716			50.8	49.5
	9:10 AM	015716				
			20.2			
	4:30 PM	016900				
			11.5			
9/10/68	7:45 AM	019419			50.8	49.5
	10:00 AM		(hydrant shut down)			
9/11/68	9:50 AM	020040				
			19.0			
	4:30 PM	021056			50.8	49.5
			23.8			
9/12/68	8:10 AM	024033				
	10:00 AM		(input discontinued)			
	4:30 PM	024476		52.6	50.7	49.3
9/13/68	9:00 AM			52.7		49.3
9/16/68	2:00 PM			52.8		49.5

Total time of input - 100 hours
Total volume of input - 111,900 gallons

TABLE II

SECOND TEST

Day	Time	Water Meter Reading (cf)	Average Flow (gpm)	Feet to Water Surface from Top of Casing		
				Hole #1	Hole #2	Hole #3
9/16/68	2:00 PM			52.8	49.5	
9/17/68	1:20 PM	024776	15.3			
9/18/68	7:40 AM	027020				
	9:00 AM			52.9	49.5	
	5:45 PM	029650	33.6			
9/19/68	7:50 AM	033450				
	3:50 PM	035540	30.6	52.7	49.4	
9/20/68	7:45 AM	039455	31.8	52.7	49.3	
9/21/68	10:50 AM	046370	29.6	52.6	49.2	
9/22/68	11:00 AM	052110	26.7	52.6	49.2	
9/23/68	7:55 AM	056590		52.6	49.2	
	5:25 PM	058170	20.7			
	5:25 PM	058170	17.0			
9/24/68	9:00 AM	060300	(hydrant shut down)			
	9:50 AM			52.6	49.2	
	3:20 PM	061175	19.5			
9/25/68	7:35 AM	036720		52.6	49.2	
	5:20 PM	065230	22.4			

Table II
Second Test (Cont'd)
Page 2

Day	Time	Water Meter Reading (cf)	Average Flow (gpm)	Feet to Water Surface from Top of Casing		
				Hole #1	Hole #2	Hole #3
9/26/68	7:45 AM	067825		52.6		49.2
	6:00 PM	069720	21.7			
9/27/68	7:50 AM	072130		52.6		49.2
	4:25 PM	073710	22.9 (input discontinued)			
10/1/68	4:15 PM			52.8	50.8	49.5

Total time of input - 242 hours
Total volume of input - 365,900 gallons

TABLE III

CHEMICAL ANALYSES OF
GROUND WATER FROM HOLE #3

pH	6.6
Phen. Alk, mg/l $CaCO_3$	0
Total Alk, mg/l $CaCO_3$	387
Chloride, mg/l	68.9
Iron, ppm	420
Manganese, ppm	60
Sulfates, mg/l	1,580
Hardness, mg/l as $CaCO_3$	1,998

Samples Analyzed - November 25, 1968

File W.R. St Louis County Report on Pro Bn misc file.

3-22-1970 National Lead Company St. Louis County

National Lead's Plan For Waste Opposed

By JEROME P. CURRY
Of the Post-Dispatch Staff

A proposal by National Lead Co. to dump effluent from its lead and oil works into abandoned clay mines under the Hill area has triggered concern among residents there.

"What effect would pouring this waste into the clay mines have on the terrain," asked Msgr. Adrian Dwyer, pastor of St. Ambrose Roman Catholic Parish at 5130 Wilson Avenue. "No one knows now."

A hearing by the St. Louis City Board of Public Service on the proposal will be at 11 a.m. Tuesday at City Hall. The hearing was scheduled after opposition from citizens of the area was noted when a permit to National Lead was approved for the project. The permit is being held in abeyance.

National Lead filed a proposal last May 26 to pump liquid waste from their lead and oil plant at 5548 Manchester Avenue into the old clay mines — now closed off and partially filled with water. The mines are centered in the vicinity of the "Midge Berra Park area of the Hill.

The permit was approved last July 8. The Post-Dispatch was told that Alderman Alfred J. Giuffrida (Dem.), Twenty-fourth Ward, then asked for a hearing. That hearing is set Tuesday.

Because the permit request was considered routine, it was not advertised, said an employe of the Board of Public Service.

Attitude of Concern

"The attitude of people in this neighborhood is concern," said Msgr. Dwyer. "When water reaches a certain level in the old mines — what then? Can it seep and undermine houses and go into basements? People wonder. There will be serveral million gallons of water down there. We want to express our concern over the possible effects and ask for an investigation on the possible effects of this."

Msgr. Dwyer; The Rev. Salvatore Polizzi, associate pastor at St. Ambrose; several members of the St. Ambrose Parish, and other resident of the Hill plan to be at that Tuesday hearing.

The spectre of terrain shifting because of pumping the water into the old mines was raised. Earthquakes were caused at Denver, Colo., when water was pumped under pressure into underground caverns, the Post-Dispatch was told by one resident.

Not Pressure Pumping

Arnold Judson, superintendent of the lead and oil works, was not available for comment. But sources said that the water would not be pumped into the mines under pressure but would be a gravity operation. The effluent—mostly water—would contain about 7 per cent inert solids. This means it would be a base instead of an acid.

"It looks like muddy water to me," said Msgr. Dwyer. "I've seen a bottle of the stuff."

Another concern is the possibility of trace metal contamination of the effluent. If such metals are present and there is seepage, there could be an effect on the ground water.

Blast Lifts Siberian Spirits

MOSCOW, March 21 (AP) — Windows broke, dogs barked, and a Siberian anti-bomb squad turned out when an explosion jolted the sleeping city of Divnogorsk, Trud reported.

There was no bomb, the labor newspaper said, but a homemade vodka distillery exploded in the apartment of A. Shachnev, who "got what he deserved" — apparently a fine. No one was reported injured.

Ref. 16
A

Header Data

Log # 004986 Owner:BAUMHOFF ORGE St:MO Cnty:ST. LOUI
SE SE SW TRS: S22 T45N R06E
Alias: Lat.:
Type well:Private Well Long.:
log: S Quad:UNKNOWN
Driller:E.E. BURT Date:12/1938
Driller License No: Confidential:N Release Dt. /
Logger:GROSHKOPF Date: /

Elev.: 449 Elev.S Yield: 0 SWL:(a) H20 @:
T.D.: 1442 base: DrDwn: 0 SWL:(b)

Bedrock at: 0 Samples saved:N Int. cored: 0 to 0
Top Fm.:STE. GENEVIEVE LIMESTONE
Bot Fm.:POWELL DOLOMITE
Problems:
Remarks:

Construction Data

Log #:004986 Date Completed:12/1938

CASING: Dpth: 40 Diam:10.00 I/O:O Sz. Hole: 0.00 Sz. Below: 0.00
0 0.00
0 0.00
0 0.00

GROUT:	Type	Rig	Methd	Dt Abnd	Plug Date	Top	Bottom
				/	/	0	0

PUMP:	Cap	Type	Set at	TDH	Scrn Typ	Size	Lgth	Slot
	0		0	0		0	0	0

Well Treat	Type Dev	Typ Compl	Perf. Interval	Tube Pres.	Oil	Gas
			Top: 0 Bot: 0			

Open Top:STE. GENEVIEVE LIMESTONE
Formations Bot:POWELL DOLOMITE
Other data sources:
Remarks:

Stratigraphy Data

Log #:004986

Top	Base	Name	--Lith-- Pr	Sc	Mn	Minerals Pri	Oc	Sec	Oc	Mnr	Oc
0	15	STE. GENEVIEVE LIMESTONE	LS	SD			0		0		0
15	200	ST LOUIS LIMESTONE	SL	CH			0		0		0
200	340	SALEM FORMATION	LS	CH			0		0		0
340	415	WARSAW FORMATION	SH	LS			0		0		0
415	570	KEOKUK-BURLINGTON LS. UNDIFF	CH	LS			0		0		0
570	660	FERN GLEN FORMATION	LS	CH			0		0		0
660	675	CHOUTEAU GROUP	LS	CH			0		0		0
675	1090	UNKNOWN	UN				0		0		0
1090	1210	PLATTIN LIMESTONE	LS	CH			0		0		0
1210	1290	JOACHIM DOLOMITE	DL	SD	SH		0		0		0
1290	1380	ST PETER SANDSTONE	SD				0		0		0
1380	1442	POWELL DOLOMITE	CH	DL			0		0		0

Printed on 12/30/93 at 10:31:15.

Header Data

Log # 000419 Owner:VROOMAN APT St:MO Cnty:ST. LOU
SE SE SW TRS: S08 T45N R07E
Alias: Lat.:
Type well:Private Well Long.:
e log: S Quad:UNKNOWN
ller:H.W. HAVERSTICK Date: /1906
Driller License No: Confidential:N Release Dt. /
Logger:GLEASON Date: /

Elev.: 510 Elev.S Yield: 0 SWL:(a) H20 @:
T.D.: 438 base: DrDwn: 0 SWL:(b)

Bedrock at: 22 Samples saved:N Int. cored: 0 to 0
Top Fm.:ST LOUIS LIMESTONE
Bot Fm.:BURLINGTON LIMESTONE
Problems:
Remarks:
More:LOG COMPILED FROM CUTTINGS AND DRILLERS LOG

Stratigraphy Data

Log #:000419

Top	Base	Name	--Lith-- Pr	Sc	Mn	Pri	Minerals Oc	Sec	Oc	Mnr	Oc
22	230	ST LOUIS LIMESTONE	LS	CH			0		0		0
230	300	SALEM FORMATION	LS	CH			0		0		0
300	370	WARSAW FORMATION	SH				0		0		0
370	438	KEOKUK-BURLINGTON LS. UNDIFF	LS	CH			0		0		0

Printed on 12/30/93 at 10:41:42.

Header Data

Log # 003562
Owner:TRETOLITE CO
St:MO Cnty:ST. LOUIS
NE NW SE TRS: S28 T45N R06E
Alias:
Lat.:
Type well:Private Well
Long.:
Type log: S
Quad:UNKNOWN
Driller:CLARK BROS Date:04/1936
Driller License No:
Confidential:N Release Dt. /
Logger:GROHSKOPF Date: /

Elev.: 470 Elev.S Yield: 20 SWL:(a) H20 @:
T.D.: 889 base: DrDwn: 0 SWL:(b)

Bedrock at: 0 Samples saved:N Int. cored: 0 to 0
Top Fm.:ST LOUIS LIMESTONE
Bot Fm.:DECORAH GROUP
Problems:
Remarks:
More:CONSIDERABLE D.D. ALL WATER CAME FROM ABOVE CHATTANOOGA

Stratigraphy Data

Log #:003562

Top	Base	Name	--Lith-- Pr	Sc	Mn	Pri	Oc	Minerals Sec	Oc	Mnr	Oc
0	155	ST LOUIS LIMESTONE	LS	CH			0		0		0
155	300	SALEM FORMATION	LS	CH			0		0		0
300	390	WARSAW FORMATION	SH	LS	CH		0		0		0
390	560	KEOKUK-BURLINGTON LS. UNDIFF	CH	LS			0		0		0
560	625	FERN GLEN FORMATION	CH	LS			0		0		0
625	660	CHOUTEAU GROUP	LS	CH			0		0		0
660	670	CHATTANOOGA SHALE	SH				0		0		0
	770	MAQUOKETA SHALE	SH				0		0		0
	875	KIMMSWICK LIMESTONE	LS	CH	SH		0		0		0
875	889	DECORAH GROUP	LS	SH			0		0		0

Printed on 12/30/93 at 10:34:01.

Header Data

Log # 002460 Owner:CITY SANITORIUM St:MO Cnty:ST. LOUIS
SW SE SW TRS: S30 T45N R07E
Alias: Lat.:
Type well:Private Well Long.:
Type log: S 1869 Quad:UNKNOWN
Driller: Date:08/~~1969~~
Driller License No: Confidential:N Release Dt. /
Logger:HUNDHAUSEN Date: /

Elev.: 570 Elev.S Yield: 0 SWL:(a) H20 @:
T.D.: 3883 base: DrDwn: 0 SWL:(b)

Bedrock at: 0 Samples saved:N Int. cored: 0 to 0
Top Fm.:PENNSYLVANIAN SYSTEM
Bot Fm.:PRECAMBRIAN ERATHEM
Problems:
Remarks:

Stratigraphy Data

Log #:002460

Top	Base	Name	--Lith-- Pr	Sc	Mn	Pri	Minerals Oc	Sec	Oc	Mnr	Oc
0	115	PENNSYLVANIAN SYSTEM	LS	SD			0		0		0
115	135	STE. GENEVIEVE LIMESTONE	LS	SD			0		0		0
135	310	ST LOUIS LIMESTONE	LS	CH	SD		0		0		0
310	490	SALEM FORMATION	LS	CH			0		0		0
490	590	WARSAW FORMATION	LS	CH			0		0		0
[illegible]0	755	KEOKUK-BURLINGTON LS. UNDIFF	LS	CH			0		0		0
755	805	FERN GLEN FORMATION	LS	CH			0		0		0
805	837	CHOUTEAU GROUP	LS	CH			0		0		0
837	840	CHATTANOOGA SHALE	SH				0		0		0
840	880	SILURIAN SYSTEM	DL	CH			0		0		0
880	1020	MAQUOKETA SHALE	SH				0		0		0
1020	1115	KIMMSWICK LIMESTONE	LS	CH			0		0		0
1115	1140	DECORAH GROUP	LS	CH			0		0		0
1140	1330	PLATTIN LIMESTONE	LS	CH			0		0		0
1330	1455	JOACHIM DOLOMITE	DL				0		0		0
1455	1585	ST PETER SANDSTONE	SD				0		0		0
1585	1660	POWELL DOLOMITE	DL	CH	SD		0		0		0
1660	1910	COTTER DOLOMITE	DL	SD			0		0		0
1910	2065	JEFFERSON CITY DOLOMITE	DL	CH			0		0		0
2065	2185	ROUBIDOUX FORMATION	DL	SD			0		0		0
2185	2465	LOWER GASCONADE DOLOMITE	DL	CH			0		0		0
2465	2490	367GNTR*	DL	SD			0		0		0
2490	2885	EMINENCE-POTOSI DOLOMITES	DL				0		0		0
2885	2985	DERBY-DOERUN DOLOMITE	DL				0		0		0
2985	3110	DAVIS FORMATION	DL	SD			0		0		0
3110	3530	BONNETERRE FORMATION	DL				0		0		0
3530	3765	LAMOTTE SANDSTONE	SD				0		0		0
3765	3883	PRECAMBRIAN ERATHEM	SD				0		0		0

Printed on 12/17/93 at 14:23:19.

----------Header Data----------

Log # 004986 Owner:BAUMHOFF GEORGE St:MO Cnty:ST. LOUIS
SE SE SW TRS: S22 T45N R06E
Alias: Lat.:
Type well:Private Well Long.:
Type log: S Quad:UNKNOWN
Driller:E.E. BURT Date:12/1938
Driller License No: Confidential:N Release Dt. /
Logger:GROSHKOPF Date: /

Elev.: 449 Elev.S Yield: 0 SWL:(a) H20 @:
T.D.: 1442 base: DrDwn: 0 SWL:(b)

Bedrock at: 0 Samples saved:N Int. cored: 0 to 0
Top Fm.:STE. GENEVIEVE LIMESTONE
Bot Fm.:POWELL DOLOMITE
Problems:
Remarks:

----------Construction Data----------

Log #:004986 Date Completed:12/1938

CASING: Dpth: 40 Diam:10.00 I/O:O Sz. Hole: 0.00 Sz. Below: 0.00
0 0.00
0 0.00
0 0.00

GROUT:	Type	Rig	Methd	Dt Abnd	Plug Date	Top	Bottom
				/	/	0	0

PUMP:	Cap	Type	Set at	TDH	Scrn Typ	Size	Lgth	Slot
	0		0	0		0	0	0

Well Treat	Type Dev	Typ Compl	Perf. Interval	Tube Pres.	Oil	Gas
			Top: 0 Bot: 0			

Open Top:STE. GENEVIEVE LIMESTONE
Formations Bot:POWELL DOLOMITE
Other data sources:
Remarks:

----------Stratigraphy Data----------

Log #:004986

Top	Base	Name	--Lith-- Pr	Sc	Mn	Pri	Oc	Sec	Oc	Mnr	Oc
0	15	STE. GENEVIEVE LIMESTONE	LS	SD			0		0		0
15	200	ST LOUIS LIMESTONE	SL	CH			0		0		0
200	340	SALEM FORMATION	LS	CH			0		0		0
340	415	WARSAW FORMATION	SH	LS			0		0		0
415	570	KEOKUK-BURLINGTON LS. UNDIFF	CH	LS			0		0		0
570	660	FERN GLEN FORMATION	LS	CH			0		0		0
660	675	CHOUTEAU GROUP	LS	CH			0		0		0
675	1090	UNKNOWN	UN				0		0		0
1090	1210	PLATTIN LIMESTONE	LS	CH			0		0		0
	1290	JOACHIM DOLOMITE	DL	SD	SH		0		0		0
	1380	ST PETER SANDSTONE	SD				0		0		0
1380	1442	POWELL DOLOMITE	CH	DL			0		0		0

Printed on 12/17/93 at 14:33:02.

- - - - - - - - - - - - - - - - H e a d e r D a t a - - - - - - - - - - - - - - - -

Log # 007923 Owner:ACETYLENE GAS CO St:MO Cnty:ST. LOUIS
SW SW NE TRS: S21 T45N R07E
Alias: Lat.:38,37,37.305N
Type well:Private Well Long.:90,14, 1.172W
Type log: S Quad:38090B6
Driller:M. BUTLER Date:06/1942
Driller License No: Confidential:N Release Dt. /
Logger:GOTT Date:09/1942

Elev.: 460 Elev.S Yield: 0 SWL:(a) H20 @:
T.D.: 400 base: DrDwn: 0 SWL:(b)

Bedrock at: 63 Samples saved:N Int. cored: 0 to 0
Top Fm.:SALEM FORMATION
Bot Fm.:FERN GLEN FORMATION
Problems:
Remarks:

- - - - - - - - - - - - - C o n s t r u c t i o n D a t a - - - - - - - - - - -

Log #:007923 Date Completed:06/1942

CASING: Dpth: 69 Diam: 8.00 I/O:O Sz. Hole: 0.00 Sz. Below: 0.00
0 0.00
0 0.00
0 0.00

GROUT: Type Rig Methd Dt Abnd Plug Date Top Bottom
/ / 0 0

PUMP: Cap Type Set at TDH Scrn Typ Size Lgth Slot
0 0 0 0 0 0

Well Treat Type Dev Typ Compl Perf. Interval Tube Pres. Oil Gas
Top: 0 Bot: 0

Open Top:SALEM FORMATION
Formations Bot:FERN GLEN FORMATION
Other data sources:
Remarks:

- - - - - - - - - - - - - S t r a t i g r a p h y D a t a - - - - - - - - - - -

Log #:007923

Top	Base	Name	--Lith-- Pr	Sc	Mn	Pri	Oc	Sec	Oc	Mnr	Oc
63	140	SALEM FORMATION	LS	SD	CH		0		0		0
140	235	WARSAW FORMATION	SH	LS	CH		0		0		0
235	395	KEOKUK-BURLINGTON LS. UNDIFF	CH	LS			0		0		0
395	400	FERN GLEN FORMATION	SH	CH			0		0		0

Printed on 12/17/93 at 14:30:17.

[redacted]

Header Data

Log # 001525 Owner:MARSHALL #1
Alias:
St:MO Cnty:ST. LOUIS
SW SE NE TRS: S27 T45N R06E
Lat.:
Long.:
Quad:UNKNOWN
Type well:Private Well
Date: /1890 Confidential:N Release Dt. /
Type log: D
Driller:CARTER, W.H.
Date: /
Driller License No:
Logger:
Elev.: 490 Elev.S Yield: 0 SWL:(a) H20 @:
T.D.: 1800 base: DrDwn: 000 SWL:(b)
Int. cored: 0 to 0
Bedrock at: 0 Samples saved:N
Top Fm.:
Bot Fm.:
Problems:L
Remarks:

Stratigraphy Data

Log #:001525

Top	Base	Name	--Lith-- Pr	Sc	Mn	Pri	Minerals Oc Sec	Oc Mnr	Oc
0	230	SALEM FORMATION	LS	CH			0	0	0
230	320	WARSAW FORMATION	LS	SH	CH		0	0	0
320	525	KEOKUK-BURLINGTON LS. UNDIFF	LS	CH	SS		0	0	0
525	580	FERN GLEN FORMATION	CH	LS			0	0	0
580	600	CHOUTEAU GROUP	LS				0	0	0
600	700	MAQUOKETA SHALE	SH	LS			0	0	0
700	795	KIMMSWICK LIMESTONE	LS				0	0	0
795	820	DECORAH GROUP	LS				0	0	0
820	1125	PLATTIN LIMESTONE	LS				0	0	
1125	1240	ST. PETER-EVERTON FMS. UNDIFF	SS				0		
1240	1700	CANADIAN SERIES	CH	LS					
1700	1800	ROUBIDOUX FORMATION	SS						

Printed on 12/17/93 at 14:36:13.

MISSOURI

GEOLOGICAL SURVEY

VOLUME XI

CLAY DEPOSITS

BY

H. A. WHEELER

CHARLES R. KEYES
STATE GEOLOGIST

JEFFERSON CITY
1904

The Christy Fireclay Co. is one of the few that regularly records the purity of the washed clay by having frequent analyses made of samples that represent a week's washing. An average of three weekly analyses that were made by William Chauvenet is as follows:

	Per cent.
Silica	62.[illegible]
Alumina	24.24
Water	10.[illegible]
Sesquioxide of iron	1.90
Lime	0.20
Magnesia	0.32
Alkalies	1.0[illegible]
Total	100.00

The total output of the mine is about 70 tons a day, which is raised by a steam hoist; this is picked over and sorted into three grades: (1) crude clay, which is shipped direct to to the glass works, (2) the pot-clay which goes to the factory to be washed after weathering for a year or more, and (3) firebrick clay which goes to the firebrick department to be made into various grades of firebrick.

Parker-Russell Fireclay Mine. This plant is on an extensive estate at Oak Hill, on the Morganford road, in the southwestern part of the city and about one mile north of the Christy place. The property was first worked for coal in 1820 by James Russell, and for many years it was one of the largest of the St. Louis coal mines. The coal seam is at a depth of 80 feet and has a thickness of 4 to 6 feet which is exceptional. The coal was worked by hand, and about 1,500,000 bushels a year were mined, which sold for 5 to 12 cents according to the varying conditions of the market. The last of the coal pillars was robbed about 1887, since which time the property has been exclusively operated for fireclay, of which about 20,000 tons a year are produced. In 1866 operations began on the Cheltenham fireclay seam which occurs at a depth of 117 feet.

#52

The seam is from 3 to 7 feet in thickness. The upper portion contains the purest clay, as the lower part is more or less contaminated with greenish protoxide of iron. The clay is very coarse-grained, and contains a white efflorescence that consists mainly of sulphate of soda which shows as delicate needles on drying. The clay is worked by the room and entry system in which the rooms are carried from 18 to 20 feet wide and the pillars 20 to 25 feet thick. The clay is sheared on the side with hand picks, then blasted with black powder, and hauled in cars by mules to the shaft. There is an excellent gray rock roof over the clay and it is underlain by a green sandstone which is said to rest on the St. Louis limestone.

A preliminary examination of a sample of this clay gave the following characteristics: Color dark gray, with occasional green and yellow stainings. Texture compact, massive, hard (2 to 2.5), and coarse-grained. Taste, lean and sandy. Slacked readily and completely into coarse grains. Pyrite occurred rather freely, as crystals one-eighth to one-hundredth of of an inch in size. Sand was abundantly disseminated. When ground to 20-mesh and mixed with 15.0 per cent of water it made a plastic paste that shrunk 7.0 per cent in drying and 4.0 per cent when vitrified, giving a total shrinkage of 11.0 per cent. With 20.0 per cent of water the air-shrinkage was 10.0 per cent; with 18.0 per-cent of water it was 8.2 per cent. The air-dried mud had a tensile strength of 120, and a maximum of 140 pounds to the square inch. Incipient vitrification occurred at 2,250° F., complete at 2,430°, and viscous at 2,700°.

A chemical analysis gave the following results:

	Per cent.
Combined silica	21.[illegible]
Free silica	42.[illegible]
Alumina	18.[illegible]
Combined water	7.7[illegible]
Titanic acid	trace
Ferric oxide	1.2[illegible]
Ferrous oxide	1.2[illegible]
Lime	0.31
Magnesia	0.0[illegible]
Potash	0.1[illegible]
Soda	0.5[illegible]
Sulphur	0.[illegible]
Sulphuric acid	0.24
Total	99.[illegible]
Moisture	2.7[illegible]
Total fluxes	3.01
Specific gravity	2.44

Tole and Thorp Fireclay Mine. This location is on a spur of Oak Hill railroad about one mile west of the Parker-Russel mine and near the city insane asylum. There are 43 acres in this property and like all the adjoining land, it was formerly worked for coal. The latter was only 2 to 4 feet thick. Only fireclay is mined which is sold on the open market partly in and about St. Louis, and partly to distant points. The mine was opened in 1880 by a shaft that is 93 feet on account of being on top of a hill. The fireclay averages about 6 feet in thickness, though occasionally it is as thick as 12 feet and again as thin as three feet. It is worked by the room and entry system with rooms 10 feet wide and pillars 30 feet thick, it being the intention to draw the pillars later. The clay is sheared along the side for a distance of 3 or 4 feet and then blasted by two shots of black powder and hauled in cars by

#51 on map

mules to the shaft. The following is a section of the shaft as given by Mr. Jacob Thorp:

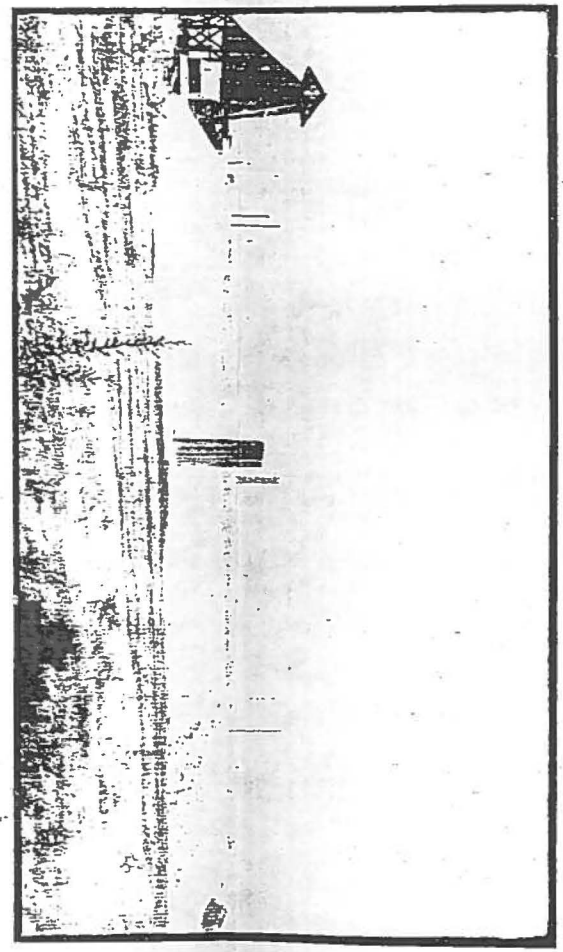
6. Clay, yellow	[illegible]
5. Limestone	[illegible]
4. Coal, (formerly worked), average	2.0
3. Fireclay	1
2. Clay, yellow	4.5
1. [illegible]	[illegible]
3. Shale, blue	1.0
2. Sandstone, black	4.5
1. Fireclay (worked)	12.5

The clay is largely shipped to the zinc works in Missouri, Kansas and Illinois, while the Parker-Russel, the Mississippi Glass Works and other manufacturers are extensive purchasers. The shaft is worked by a steam hoist, and the mine is producing about 50 tons a day, which is shipped direct without weathering. The quality of the Cole and Thorp fireclay is excellent, it being rather above the average of the Cheltenham seam.

Hydraulic Press Brick Fireclay Mines. Yard No. 2 is on the southwest corner of Kings highway and the St. Louis and San Francisco railroad in the western part of St. Louis. The underlying fireclay seam is operated for making buff and other ornamental brick. The shaft is 65 feet deep, and the fireclay, which is the Cheltenham seam or the one worked throughout the St. Louis district is 5 to 10 feet thick, averaging 7 feet. The fireclay is overlain by a 3 inch coal seam and is underlain by a very lean and extremely sandy clay that is green, from protoxide of iron. The clay is mined by the room and single entry system with entries 8 to 9 feet wide and pillars 20 feet, and hauled to the shaft in cars by mules. A crew of 4 diggers or miners, 5 car fillers and a driver and mule get out about 100 cars of 800 pounds or about 40 tons a day. The clay is raised through a vertical shaft by a horse gin or whim and is run out on a large dump, where it is allowed to weather for 3 to 6 months before it is used. (See plate XI.) A very superior quality of buff, Roman, enamelled, and other ornamental brick are made from the weathered clay on hydraulic presses and are burned in down-draft kilns.

Yard No. 3 of the same company is on the New Manchester road and Des Peres river, one-half mile north of shaft No. 2. The underlying fireclay is worked for furnishing clay for ornamental building brick. The shaft is 75 feet deep, and the clay averages 7 feet in thickness. The clay is utilized in the same manner as at the other yard and is similar in its general character. The output is about 40 tons a day.

Evans and Howard Mines. There are two fireclay mines that adjoin the extensive factory at Howards, in the western part of St. Louis.



One is on the south side of the Des Peres river, and is known as the "South" or No. 6 pit; and one is north of the same stream and the New Manchester road which was formerly known as the Wrisberg pit, but is now known as the "North" or No. 7 pit.

The South pit is the oldest or the original mine. It has furnished most of the fireclay. It is operated by a shaft on a hillside that is 65 feet deep, and the fireclay averages 7 feet in thickness. There is an overlying 2-inch seam of coal and an underlying sandstone that is over 6 feet thick, under which occurs the St. Louis limestone. The clay is worked by room and entry system, and is raised through the shaft by means of a horse whim. The clay is allowed to weather on the dump for about one year, and in special cases, from five to seven years.

A sample of the clay gave the following results: Color dark to light gray, with occasional black bituminous matter and fossilized leaves and stems. Texture massive, compact, hard (2.5 to 3.0), quite uniform and coarse-grained. Taste, gritty and fat. Slacked readily and completely into coarse granules one-twentieth to three-eighths of an inch in size. Pyrite was present as occasional fine to coarse crystals. When ground to 20-mesh and mixed with 15.0 per cent of water it made a rather plastic to short paste that shrunk 6.3 per cent on drying and 5.4 per cent when vitrified, giving a total shrinkage of 11.7 per cent. Briquettes of the air-dried mud gave an average tensile strength of 78, and a maximum of 91 pounds to the square inch. Incipient vitrification occurred at 2,250° F., complete at 2,450° and viscous at 2,650°.

A chemical analysis showed:

	Per cent
Combined silica	[illegible]
Free silica	[illegible]
Alumina	[illegible]
Combined water	[illegible]
Titanic acid	[illegible]
Ferrous oxide	[illegible]
Ferric oxide	[illegible]
Lime	[illegible]
Magnesia	[illegible]
Potash	[illegible]
Soda	[illegible]
Sulphur	[illegible]
Sulphuric acid	[illegible]
Total	[illegible]
Moisture	[illegible]
Total fluxing impurities	[illegible]
Specific gravity	[illegible]

The No. 7 or Wrisburg pit, on the north side of the Des Peres river, was formerly operated by the Wrisburg Mining Co., which sold

out to Evans and Howard. The clay is similar to that on the south side, excepting that it is not so rich in iron pyrites. The shaft is 45 feet deep, and the clay is raised by a horse gin. The air shaft gave the following section:

	Feet
5. Loess, or yellow clay	[illegible]
4. Clay, greenish shaly [illegible]	[illegible]
3. Gray [illegible]	10
2. Shale, red	7
1. Sandstone, blue-gray, shaly	4
[illegible]	[illegible]
2. Fireclay (seam worked [illegible] feet)	[illegible]
1. Sandstone, over	[illegible]

The clay from both north and south pits is hauled by wagons to the factory and used for firebrick, retorts, sewerpipe, terra cotta, and ornamental brick. For sewerpipe it is mixed with some top or yellow loess clay, to darken it, which renders the pipe more salable. Each pit produces from 75 to 100 tons a day.

Jones Mine is on the north side of the New Manchester road at Cheltenham and immediately west of the Wrisburg pit. The output ranges from 20 to 25 tons a day, for about one-half the year and is mainly sold to Evans and Howard, the Laclede Fire Brick Co., and the Missouri Fire Brick Co., at prices ranging from $.65 to $1.00 a ton delivered at the factory. The fireclay is 9 feet thick, and is similar to that of Evans and Howard in character and mode of occurrence. The following is a section of the shaft which is 75 feet deep:

	Feet
5. Loess, or yellow clay	[illegible]
4. Potters' clay	[illegible]
3. Shale, brown to red	[illegible]
2. Sandrock, black	[illegible]
1. Fireclay	[illegible]

Lagarce Pit. On the south side of the River Des Peres and Sublette avenue, in Cheltenham, a fireclay pit was opened by John Lagarce in 1890, and 100 tons were mined, on a royalty of 10 cents a ton. The pit is only worked spasmodically, and always on a small scale. The clay is sold to the Laclede Fire Brick Co. for making fire brick. The mine is opened by an entry at the base of a hill on the south side of the Des Peres valley.

Tiepelman Pit. On the south side of the Des Peres river and Sublette avenue, in Cheltenham, Wm. Tiepelman opened a pit in 1890 by driving an entry in the Cheltenham fireclay seam at the base of the south flank of the Des Peres valley. The pit has been operated only on a small scale, and has produced a maximum of 200 to 300 tons a month. The land is leased on a royalty of 10 cents a ton, and the fireclay sold to the Cheltenham Fire Brick Co. at 60 to 70 cents a ton delivered.

Matthieson and Hegeler Mine. This firm operates the largest zinc smelter in the country, at La Salle, Illinois, and uses about 1,500 tons of St. Louis fireclay a year for retorts. It is mined from an eleven acre tract that is about one mile west of Cheltenham, and on the north side of the New Manchester road. From two to six men are employed and the mine is worked on the room and entry system. It is entered by a drift at the foot of a hill which saves all hoisting and pumping. The seam is about 7 feet in thickness, but only about 4½ feet of the better portion of it is taken out, the lower 3 feet being untouched, on account of the excessive amount of fine pyrites and gypsum. Gypsum crystals as large as two inches in length occasionally occur at the outcrop of the vein, but the fireclay otherwise is about the same as at the Evens and Howard and the other Cheltenham pits. The rooms are carried from 8 to 10 feet in width, leaving pillars from 18 to 20 feet, and the clay is obtained by shearing and wedging, no powder being employed. Since the pit was opened in 1863 five and one-half acres have been exhausted.

Gilker Fireclay Mine. Immediately west of the Matthieson and Hegeler pit is that of Theo. Gilker, who leases 12 acres on a royalty of 15 cents a cubic yard. The mine is opened by a drift at the base of a hill, and is worked by the room and single entry system. The entries are 6 to 7 feet wide and the rooms 7 feet wide by 100 or 140 feet long with intervening pillars 15 to 20 feet wide. The pillars are drawn or robbed as fast as the rooms are exhausted. It is estimated that only about one-fourteenth of the clay is lost or not recovered. A total crew of 11 men produce about 50 tons of fireclay a day, which is hauled to the different Cheltenham firebrick factories from one to one and one-half miles east. The St. Louis or lower Carboniferous limestone crops out about 500 feet east of the drift, and is about 10 feet lower than the floor of the clay. The clay is about 8 feet in thickness, but the lower 3 feet contain much green protoxide of iron and crystals of pyrite. The clay is also occasionally permeated with large crystals of gypsum. Excepting an unusual amount of iron the clay is similar in its properties to the usual Cheltenham seam.

Laclede Mine. The Laclede Fire Brick Co., of Cheltenham, has about 100 acres of fireclay land immediately south of the large factory, from which is mined about 50,000 tons a year. The mine is entered by a drift on the south bank of the Des Peres river, and the fireclay

averages from 6 to 7 feet in thickness. The following section is exposed in the bank at the rear of the factory:

5. [illegible]	[illegible]
4. Shale, brown to green	[illegible]
3. Shale, black	[illegible]
2. Sandstone, gray	[illegible]
1. Fireclay	[illegible]
2. Coal	[illegible]
1. Fireclay (underclay, seam mined)	[illegible]

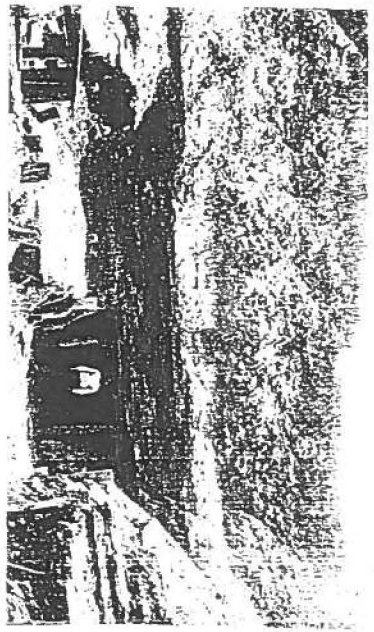
A view of the entrance of one of the drifts is shown in plate XII. The mine is worked by the room and single entry system, with rooms 12 feet wide by about 250 feet in length, with intervening pillars, 15 feet thick.

A sample of this fireclay gave the following results: Color dark gray, with occasional black bituminous fossil remains. Texture massive, compact, hard (2.50 to 3.00), coarse-grained and quite uniform. Taste, gritty and lean. Slacked rapidly and completely into coarse granules from one-tenth to one-twelfth of an inch in size. Pyrite was present as occasional disseminated fine crystals. On panning down or washing 2 pounds of dry clay a residue of one ounce of pyrite, or about 3.0 per cent was left. When ground to 20-mesh and mixed with 15.0 per cent of water it made a short paste that shrunk 6.0 per cent in drying and 5.2 per cent when vitrified, giving a total shrinkage of 11.2 per cent. Briquettes of the air-dried mud gave an average tensile strength of 91, and maximum of 98 pounds to the square inch. Incipient vitrification occurred at 2,200° F., complete at 2,450° and viscous at 2,650°.

A chemical analysis showed:

	Per cent
Combined silica	[illegible]
Free silica	[illegible]
Alumina	[illegible]
Combined water	[illegible]
Titanic acid	[illegible]
Ferrous oxide	[illegible]
Ferric oxide	[illegible]
Lime	[illegible]
Magnesia	[illegible]
Potash	[illegible]
Soda	[illegible]
Sulphur	[illegible]
Sulphuric acid	[illegible]
Total	[illegible]
Moisture	[illegible]
Total [illegible] impurities	[illegible]
Specific gravity	[illegible]

Coffin Mine. This pit is situated one mile south of Gratiot station at the junction of the Watson road and Scanlan avenue in the western



Laclede-Christy No. 11 Mine
Laclede Christy No. 1 and No. 2 Mines
Krummel and Buchner Mine
Gimbel No. 4 Mine
Laclede Christy No. 4 Mine
Edwards and Hereford Mine
Blackmer Post Mine
Van Cleave Mine
Blackmer Post Mine
Jamieson Pit Mine
Coffin Mine
Prime Western Spelter Company Mine
Humes Mine
Mississippi Glass Mine
Tole and Thorp Fire Clay Mine
Parker Russell Mine
Russell Mine
Hallock Clay Mine, Wade Brothers Mine

UNDERGROUND COAL AND CLAY MINES IN THE CITY OF ST. LOUIS, MISSOURI

by
Mimi Garstang

1987

OFM — 87-238-MR

MISSOURI DEPARTMENT OF NATURAL RESOURCES
DIVISION OF GEOLOGY AND LAND SURVEY
P.O. Box 250, Rolla, MO 65401
(314) 364-1752

Buchanan's Mine	*	West River Des Peres (location too vague)	41 ft deep shaft	Unknown	Coal	1854	None	[illegible]	
Watkins Coal Bank	*	Southeast T 47 N R 7 W	Drift	4 6 ft	Coal	1800's	None	No 4, p 178	
Hambleton Mine	*	Between Bellefontaine and New Bremen Cemetery	Bank	8 ft	Clay	1853	None	No 4, p 180-181	
Shreve Mine	*	¼ mi west of Hambleton Mine	Unknown	Unknown	Coal Clay	1853	None	No 4, p 181	
Sattler Pits	*	Schantz land on Watkins Creek, near Chain of Rocks	50 ft deep shaft	20 in 6 ft	Coal Clay	1871-1890	None	No 1, p 166-167 p 469-471	
Unknown mine	*	Meintz land between Baden and Chain of Rocks on Columbia Bottoms Road	Unknown	7 ft av	Clay	1890	None	No 1, p 266-267 p 469-471	
Unknown mine	*	Baden	Unknown	Unknown	Clay	Unknown	None	No 6	
Malcom Station Mine	*	Southeast of Creve Coeur Lake	Unknown	Unknown	Clay	Unknown	None	No 6	
St Louis Clay Burning Mine	*	Castello near Creve Coeur Lake	Unknown	Unknown	Clay	1911	None	No. 3, p. 49	
St Louis Vitrified Fire Brick Mine	*	Dorsette and Fee Fee Road	Unknown	Unknown	Clay	Unknown	None	No. 3, p. 49 No. 6	
Louis and Harter Mine	*	End of Halls Ferry Road at Broadway	Unknown	4 ft	Coal	Unknown	None	No. 5	
Kemper College Mine	*	Along Arsenal between Hampton and Kingshighway	Unknown	2 4 ft	Coal	1838	Operated by students	No. 12, December 1978	

NOTES:

* Asterisk indicates that mine could not be located from available data, or it was not within the map boundaries.

1904 Dashes before and /or after a year indicate indeterminate activity before and /or after that year.

REFERENCES:

1) Wheeler, Herbert Allen, 1896. Clay deposits. Missouri Geological Survey, Vol. XI, 1st Series.

2) Ladd, G E., 1890. The clay, stone, lime, and sand industries of St. Louis County. Missouri Geological Survey, Bulletin No. 3.

3) Fenneman, Nevin M., 1911. Geology and mineral resources of the St. Louis Quadrangle, Missouri-Illinois. U.S. Geological Survey Bulletin 438.

4) Shumard, B F., 1855. The geology of St. Louis County, *in* Swallow, G C., First and second annual reports of the Geological Survey of Missouri. Geological Survey of Missouri, 448 p.

5) Personal interviews with St. Louis historians.

6) Saeger, William Edgar, 1975. Geologic and subsurface investigations of the St. Louis, Missouri Metropolitan Area. unpublished Masters thesis, Washington University, St. Louis, Missouri.

7) Pirtle, T J., 1909. 23rd annual report of the State Mine Inspector.

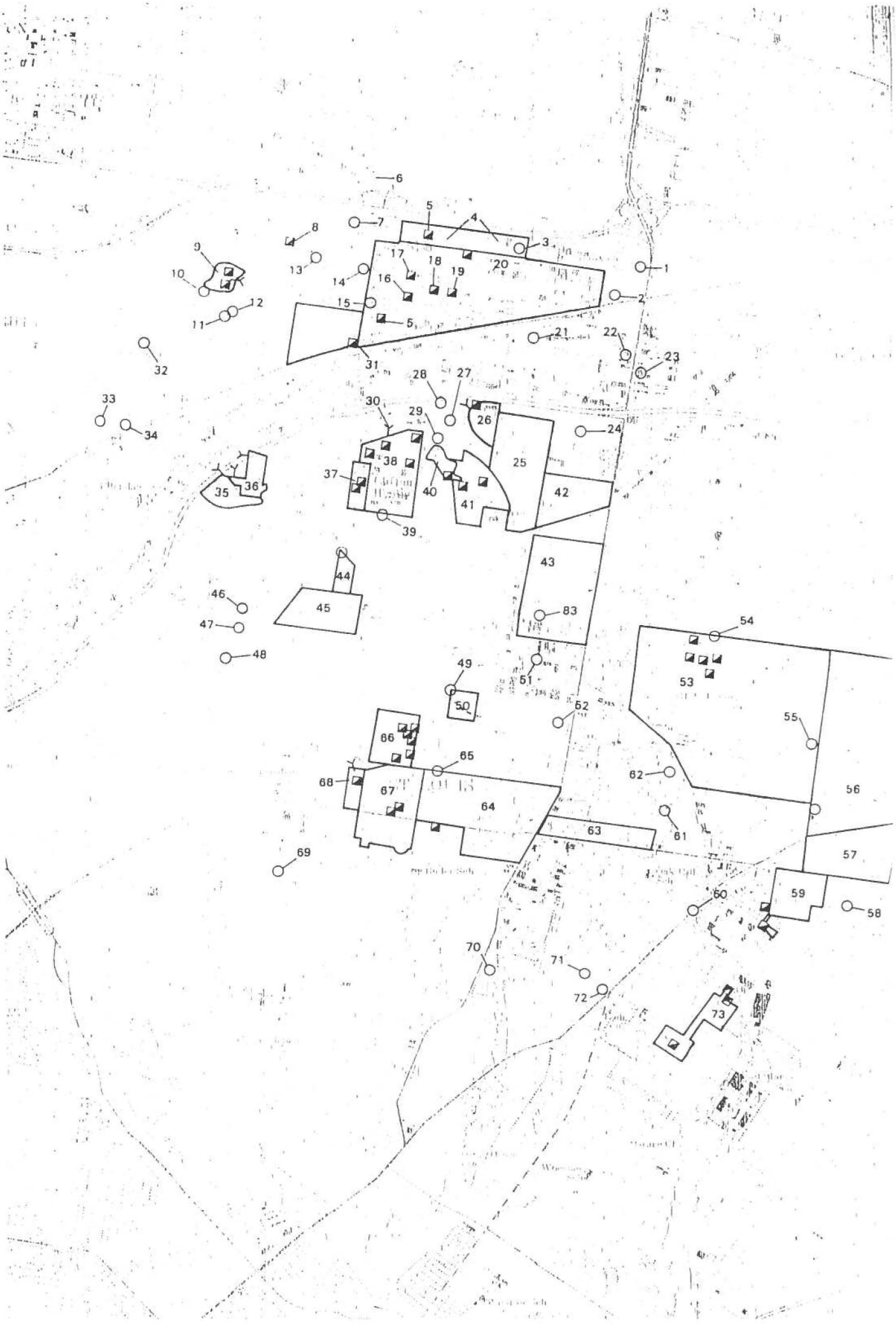
8) St. Louis Post Dispatch Newspaper.

9) Confidential drill records.

10) Compton and Dry, 1875. Pictorial St. Louis.

11) Boyer, Mary Joan, 1954. The old Gravois coal diggings.

12) Southside Journal, St. Louis Newspaper.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DEPARTMENT OF NATURAL RESOURCE PA/SI REFERENCE 32
Division of Environmental Quality

TELEPHONE OR CONFERENCE RECORD

FILE: Hubert Wheeler State School

DATE: March 2, 1994

TELEPHONE:

Incoming (X)
Outgoing ( )

CONFERENCE:

Field ( )
Office (X)

SUBJECT: Sampling at the Hubert Wheeler State School site

PERSONS INVOLVED:

NAME	REPRESENTING
Julie A. Bloss	MDNR/HWP/Superfund
Sam Brenneke	Geotechnology (314) 997-7440

SUMMARY OF CONVERSATION:

Mr. Brenneke called to discuss sampling at the Hubert Wheeler State School site. Geotechnology is preparing a second phase assessment of the site for the Division of Elementary and Secondary Education (DESE). Mr. Brenneke was aware that the Missouri Department of Natural Resources (MDNR) had sent a letter to DESE requesting that access to the site be restricted to those involved with the hazardous waste site remediation. DESE indicated to Geotechnology that MDNR might want soil gas sampling conducted at this site. Mr. Brenneke did not think that soil gas sampling was warranted, based upon the contaminants present on-site (semi-volatiles and lead). Mr. Brenneke wanted to know MDNR's opinion on soil gas sampling, and if MDNR is concerned about air contamination at the site. Mr. Brenneke indicated that the site has now been fenced.

I told Mr. Brenneke that MDNR is preparing a site inspection (SI) report on this site. For this report, we will need to conduct on-site sampling. I told Mr. Brenneke that I thought MDNR would be most interested in taking shallow soil samples (0-2 feet), as per Hazard Ranking System (HRS) scoring needs. I did not think that MDNR would need soil gas samples from Geotechnology. MDNR is not as concerned with air releases at the site as we are with contaminated soils. However, additional sampling information is always welcome, and we would not discourage Geotechnology if they want to conduct soil gas sampling.

I told Mr. Brenneke that it would be convenient for MDNR if we could split samples with Geotechnology. This would minimize the amount of disruption to the normal activities at Hubert Wheeler State School. Mr. Brenneke said that they would be probably be sampling in a month. I told Mr. Brenneke that I would contact Mr. Brian Allen, Environmental Services Program (ESP), and ask Mr. Allen to call him with regard to coordination of sampling activities. I also told Mr. Brenneke that Mr. Allen might have additional thoughts about soil gas sampling.

ACTION TAKEN:

I spoke with Mr. Allen about this call. I will route pertinent file information to him for review.

Julie A. Bloss
Environmental Specialist

JAB:so

c: Mr. Brian Allen, ESP

DEQ-4
7-75

DEPARTMENT OF NATURAL RESOURCES
Division of Environmental Quality

HUBERT WHEELER STATE
OOL

TELEPHONE OR CONFERENCE RECORD

PA/SI REFERENCE 33

E Hubert Wheeler State School - PA/SI

Date 3/14/94 @13:30

TELEPHONE

CONFERENCE

Incoming ( )

Outgoing (X)

Field ( )

Office (X)

SUBJECT Phase 2 Site Investigation @ above site

PERSONS INVOLVED

Name	Representing
Brian Allen	MDNR-ESP
Ron Citrick	DESE

SUMMARY OF CONVERSATION I relayed to Mr. Citrick ~~that~~ a couple of changes to the proposed work plan. (1) Have Geotechnology containerize decon fluids generated during the investigation. (2) Since PID screening will be performed during test pit excavations, I recommend the latitude of collecting a sample for volatiles if significant readings are noted be included in the scope of work. I also relayed MDNR's interests in being present during work & possibly collecting split samples.

ACTION TAKEN Mr. Citrick appeared amenable & relayed he would request changes be incorporated. Regarding the on-site visit he relayed Julie Bloss had already made request & she will be sending a written request to him.

FINAL RESULTS

Signature

File: Hubert Wheeler State School

HU[illegible]T WHEELER STATE SCHOOL

PA/SI REFERENCE 34

STATE OF MISSOURI

DEPARTMENT OF NATURAL RESOURCES

MEMORANDUM

DATE: March 11, 1994

TO: Larry Alderson, Chief
Superfund Unit, Field Services Section
Environmental Services Program

FROM: James L. Kavanaugh, Chief
Site Evaluation Unit, Superfund Section
Hazardous Waste Program

SUBJECT: Previous and Current Sampling at Hubert Wheeler State School Site

Attached, please find information regarding the Hubert Wheeler State School site provided to me through Mr. Al Wallen of the Superfund Section. The sampling data is from a 1990 excavation of the asphalt playground, which uncovered two drums. The map corresponds to the sampling which occurred at the site in 1993. This map is an attachment from the Geotechnology site assessment report, which was previously forwarded to your staff. The letter is regarding the sampling Geotechnology is proposing for the site later this year.

I am requesting that this information be reviewed with regard to Geotechnology's proposed scope of work. I would also like to request that the Environmental Services Program split samples with Geotechnology during their second phase assessment of the asphalt playground. This work is likely to commence within the next month. We will coordinate scheduling with you when a specific date has been chosen.

Mr. Brian Allen is the member of your staff most familiar with this site. Time associated with responding to this request may be charged to federal Superfund 3658, Site Code 3538, and the appropriate Task Code. If you have any questions regarding this site or the information provided, please contact Ms. Julie Bloss, of my staff, at 751-8629.

JLK:jabo

Attachment

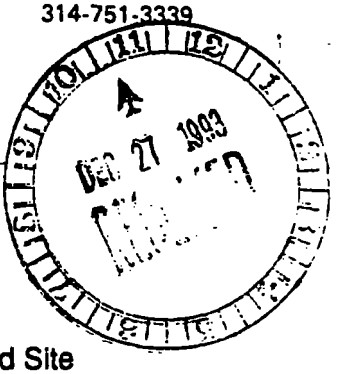
Mel Carnahan
Governor

Richard A. Hanson
Commissioner

State of Missouri
OFFICE OF ADMINISTRATION
Post Office Box 809
Jefferson City
65102

Randall G. Allen, AIA
Director
Division of Design and Construction
314-751-3339

December 22, 1993



Ed Alizadeh, P.E.
Geotechnology, Inc.
2258 Grissom Drive
St. Louis, MO 63146

RE: Restoration of Playground Site
Wheeler State School
St. Louis, Missouri
Project No. 05-523-93-0001

Dear Mr. Alizadeh:

Please send me a proposal to accomplish the following scope of work based on our contract schedule for Additional Services:

GEOTECHNOLOGY INVESTIGATION/REMEDIATION PLAN

SCOPE OF WORK:

Since previous investigation was inconclusive as to the depth, area of coverage and extent of contamination of this site, subsequent investigation is needed to arrive at a **FINAL** assessment of the type of remediation plan to develop and undertake. Geotechnology shall develop a proposal ASAP for the following Additional Services:

1. Perform a Soil Gas Survey (or other method) to determine concentration of volitiles percolating thru the soil and locate the source of the volitiles.

Proposal Rec'd 2/18/94 2. Perform Magnetometer/Radiometer Survey (or resistivity analysis) to identify magnetic underground abnormalities on the Hubert Wheeler School site.

Proposal Rec'd 2/18/94 3. Perform Infrared Thermal Scans (or other methods) of the site to determine temperature gradients of the soils to a depth (your recommendation) to determine how the tarlike substance becomes liquified and flows.

4. Perform exploratory excavation in areas where previous investigations indicate the possibility of a source (or elevated levels) of contamination, test/analyze samples, remediate immediate area of excavation, and backfill with clean soils.

5. The owner needs a remediation scope of work/cost estimate for use in requesting additional appropriations for this project.

Consultant shall develop and submit by February 1, 1994 two preliminary remediation plans and cost estimates on the basis of the following scenarios:

SCENARIO #1

Assume old abandon tank(s) containing DNR defined hazardous constituents is buried under the site and is the source of contamination.

SCENARIO #2

Assume old quarry site was used as an open dumping ground for DNR defined hazardous constituents and is therefore contaminated over a large area to a depth of (your recommendation).

Consultant shall develop an actual remediation plan and estimate based on the results of these investigations.

Please fax me a copy of your proposal to accomplish the above Scope of Work before December 30, 1993. My fax number is (314)751-7277.

Sincerely,

Gerald L. Bonnot

Gerald L. Bonnot, P.E.
Project Engineer
Division of Design and Construction

cc: Ron Littich, Department of Elementary and Secondary Education
Walter Johannpeter, Division of Design and Construction
File

LT1550GB.op

ENVIRO -- TRICS
2345 Millpark Drive
Maryland Heights, MO 63043
(314) 427-0550

DEPARTMENT ELEMENTARY &
SECONDARY EDUCATION
P.O. BOX 480
JEFFERSON CITY, MO 63138

ATTN: RON LITTICH

INVOICE # ---
PO # ---

POLYNUCLEAR AROMATIC HYDROCARBONS
SW-846 METHOD 8270

SAMPLE ID: SAMPLE RECEIVED 10/9/90
LAB ID: 9010610

CAS NUMBER		DETECTION LIMIT	RESULTS
91-20-3	Naphthalene	20,000,000 µg/kg	ND µg/kg
91-57-6	2-Methylnaphthalene	20,000,000	ND
91-58-7	2-Chloronaphthalene	20,000,000	ND
208-96-8	Acenaphthylene	20,000,000	ND
83-32-9	Acenaphthene	20,000,000	ND
86-73-7	Fluorene	20,000,000	ND
85-01-8	Phenanthrene	20,000,000	ND
120-12-7	Anthracene	20,000,000	ND
206-44-0	Fluoranthene	20,000,000	ND
129-00-0	Pyrene	20,000,000	ND
218-01-9	Chrysene	20,000,000	ND
56-55-3	Benzo(α)anthracene	20,000,000	ND
205-99-2	Benzo(β)fluoranthene	20,000,000	ND
207-08-9	Benzo(k)fluoranthene	20,000,000	ND
50-32-8	Benzo(α)pyrene	20,000,000	ND
193-39-5	Indeno(1,2,3-cd)pyrene	20,000,000	ND
53-70-3	Dibenzo(a,h)anthracene	20,000,000	ND
191-24-2	Benzo(g,h,i)perylene	20,000,000	ND

ND = BELOW DETECTION LIMIT

OCTOBER 15, 1990

WAYNE L. COOPER
LABORATORY DIRECTOR

ENVIRO -- TRICS
2345 Millpark Drive
Maryland Heights, MO 63043
(314) 427-0550

DEPARTMENT ELEMENTARY &
SECONDARY EDUCATION
P.O. BOX 480
JEFFERSON CITY, MO 63138

ATTN: RON LITTICH

INVOICE # 10920
PO # ---

ANALYSIS RESULTS

SAMPLE ID: SAMPLE RECEIVED 10/9/90
LAB ID: 9010610

TEST PERFORMED	METHOD OF ANALYSIS	RESULTS
RCRA METALS ANALYSIS	X-RAY	TOTAL
ARSENIC		<5 mg/kg
BARIUM		<5
CADMIUM		<5
CHROMIUM		<5
LEAD		859
SELENIUM		<5
SILVER		<5
MERCURY	EPA 245.1	<0.1 mg/kg
IGNITABILITY (SETAFLASH)	SW-846 1020	>200 (F)
CORROSIVITY (10%)	SW-846 9040	8.6 *

*SAMPLE WAS DISSOLVED BEFORE pH MEASUREMENT.

ENVIRONMETRICS
2345 Millpark Drive
Maryland Heights, MO 63043
(314) 427-0550

DEPARTMENT OF ELEMENTARY & SECONDARY EDUCATION
P.O. BOX 480
JEFFERSON, CITY, MO 63138

ATTN: RON LITTICH

INVOICE # 11080
PO # ---

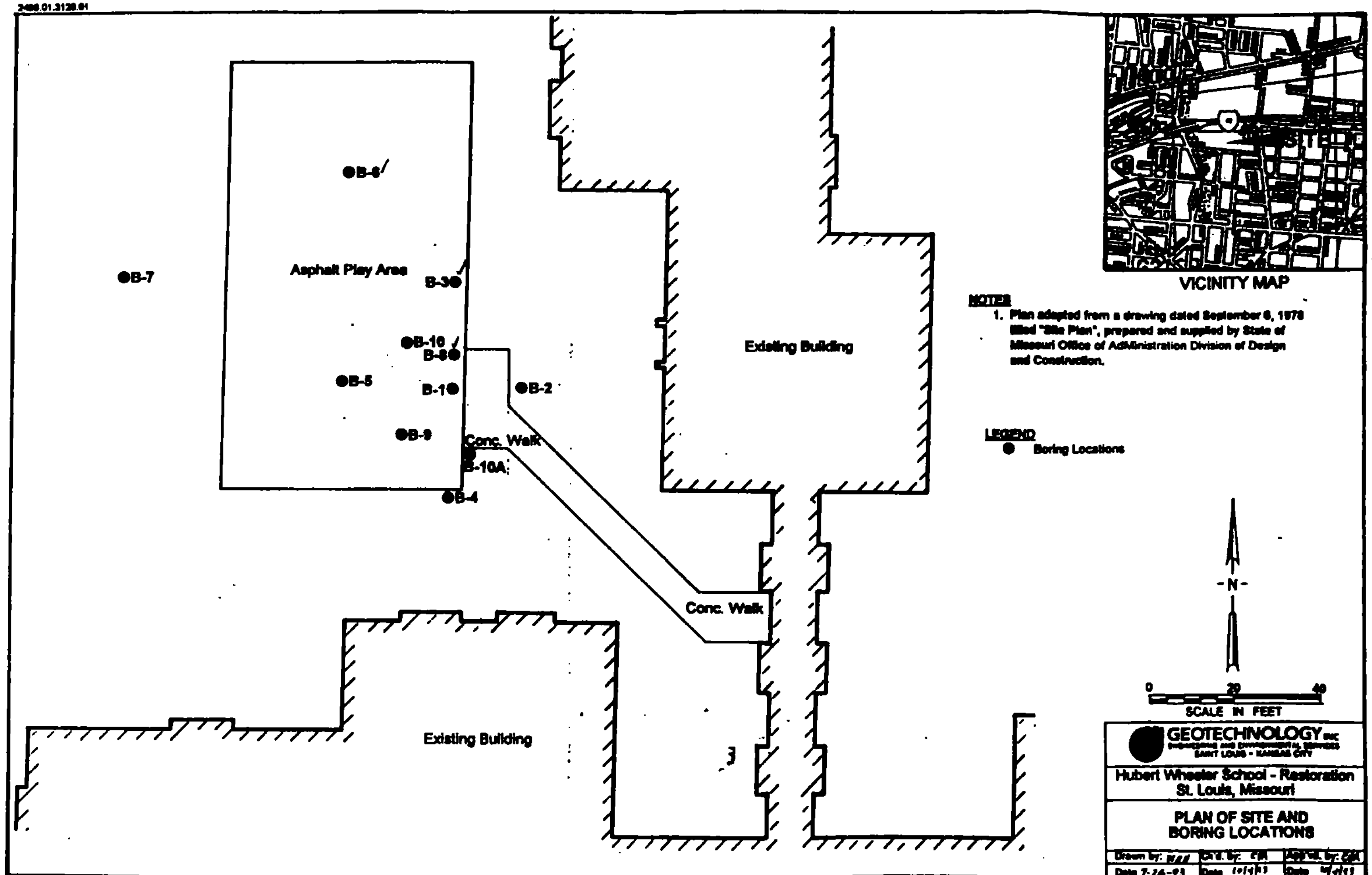
ANALYSIS RESULTS

SAMPLE ID: TAR SAMPLE
LAB ID: 9012129

TEST PERFORMED	METHOD OF ANALYSIS	RESULTS
TCLP EXTRACTION	SW-846 1311	
RCRA METALS ANALYSIS	SW-846 6010	EXTRACTION
LEAD		0.3 ppm

DECEMBER 7, 1990

WAYNE L. COOPER
LABORATORY DIRECTOR



Asphalt Play Area
B-6
B-7
B-3
B-10
B-8
B-5
B-1
B-2
B-9
Conc. Walk
B-10A
B-4
Existing Building
Conc. Walk
Existing Building
VICINITY MAP
NOTES
1. Plan adapted from a drawing dated September 6, 1978 titled "Site Plan", prepared and supplied by State of Missouri Office of Administration Division of Design and Construction.
LEGEND
Boring Locations
N
0 20 40
SCALE IN FEET
GEOTECHNOLOGY INC
SAINT LOUIS - KANSAS CITY
Hubert Wheeler School - Restoration
St. Louis, Missouri
PLAN OF SITE AND
BORING LOCATIONS
Drawn by:
Chk'd. by:
App'vd. by:
Date 7-26-93
Date
Date

PLATE 1

Hubert Wheeler State

GEOTECHNOLOGY INC.
ENGINEERING AND ENVIRONMENTAL SERVICES
SAINT LOUIS • KANSAS CITY

HUBERT WHEELER STATE SCHOOL

RECEIVED
'94 MAR 22 AM 1

PA/SI REFERENCE 35

VIA FACSIMILE

March 16, 1994

2498.01.3120.02
Revised

Mr. Gerald Bonnot
Division of Design and Construction
State of Missouri - Office of Administration
P.O. Box 809
Jefferson City, Missouri 65102

REVISED PROPOSAL
GEOPHYSICAL SITE SURVEY AND PHASE 2 SITE INVESTIGATION
PLAYGROUND SITE RESTORATION
HUBERT WHEELER STATE SCHOOL
5707 WILSON AVENUE
ST. LOUIS, MISSOURI

Dear Mr. Bonnot:

In accordance with your request, I am pleased to submit this revised proposal for providing services related to ongoing site assessment activities and preparation of a remedial investigation plan for the referenced site. We have revised our March 9, 1994 proposal to include the items you had requested during your March 15, 1994 phone conversation with Mr. Sam Brenneke. Specifically we have included services related to the following items.

- Decontamination water generated during soil sampling and test pit excavation activities will be containerized in 55-gallon drums and temporarily stored within the recently installed fenced enclosure. The drums of decontamination water will be sampled to determine disposal options and disposed with the appropriate disposal facility.

- If field screening instruments indicate the presence of volatile organics in the soils, we will include volatile organics analysis of soil samples obtained from test pit excavations.

- Soil removed during test pit excavations will be returned to the excavation following completion of the excavation activities. Excess soils will be mounded over the excavation to accommodate settling of the replaced soils. If additional fill is needed to return the excavation to grade, clean soil fill will be obtained to fill the remainder of the excavation. The fill will not be compacted.

Our revised scope of work, project completion schedule, and revised not to exceed price are included on the enclosed Professional Services Proposal form. In addition, we have attached a revised cost estimate listing the costs associated with each proposed task.

We appreciate the opportunity to be of service to the State of Missouri on this project. If you have any questions or comments, please contact Mr. Sam Brenneke or me at (314) 997-7440.

Very truly yours,

GEOTECHNOLOGY, INC.

Ed D. Alizadeh, P.E.
Principal

SLB/EDA:slb/mls/tlp/jsg

Enclosures: Cost Summary
Professional Services Proposal
Attachment 1 - Scope of Services
Attachment 2 - Unit Rate Schedule

cc: Mr. Ron Littich; Dept. of Elementary and Secondary Education

PROPE\2498REV.3

STATE OF MISSOURI
OFFICE OF ADMINISTRATION
DIVISION OF DESIGN AND CON. JCTION

PROFESSIONAL SERVICES PROPOSAL

STATE OF MISSOURI
OFFICE OF ADMINISTRATION
DIVISION OF DESIGN AND CONSTRUCTION
P.O. BOX 809
JEFFERSON CITY, MISSOURI 65102

PROJECT

Restoration of Playground Site
Hubert Wheeler State School
St. Louis, Missouri

ACCOUNT NUMBER(S):	PROJECT NUMBER:
307-72876-0992 and 307-74536-1232	05-523-93-0001(A)

FUNDS AVAILABLE FOR CONSTRUCTION, INCLUDING FEE: _____

WE, THE UNDERSIGNED, DO HEREBY PROPOSE TO PROVIDE Environmental Consulting Engineering

SERVICES FOR THIS PROJECT IN ACCORDANCE WITH THE OWNERS PROGRAM AND BUDGET AS FOLLOWS:

FIRM			
Geotechnology, Inc.			
ADDRESS	**CITY**	**STATE**	**ZIP**
2258 Grissom Drive	St. Louis	MO	63146
CT NUMBER	**TELEPHONE**		
05-523-93-0001(A)	(314) 997-7440		
SIGNATURE Ed Ahrens	**DATE** March 16, 1994		

SCOPE OF WORK

LIST ALL AREAS OF WORK INCLUDED UNDER BASIS SERVICES:

See Attachment 1

COST SUMMARY
GEOPHYSICAL SITE SURVEY AND PHASE 2 INVESTIGATION
PLAYGROUND SITE RESTORATION
HUBERT WHEELER STATE SCHOOL
5707 WILSON AVENUE
ST. LOUIS, MISSOURI

Task 1 - PROJECT COORDINATION[1]	$ 4,170.00
Task 2 - SURFACE SOIL SAMPLING	$ 5,225.00
Task 3 - INFRARED THERMOGRAPHY[2]	$ 4,392.00
Task 4 - MAGNETOMETER/GRADIOMETER SURVEY	$ 2,384.00
Task 5 - GROUND PENETRATING RADAR SURVEY	$ 6,418.00
Task 6 - TEST PIT EXCAVATION	$60,934.00
Task 7 - GEOPHYSICAL SITE SURVEY AND PHASE 2 INVESTIGATION REPORT PREPARATION	$ 7,516.00
TOTAL PROJECT COST . . .	**$91,039.00**

[1] Project coordination costs assume all tasks will be performed.

[2] Cost for Infrared Thermography Services assumes Motorized Manlift will be supplied by the State of Missouri, Department of Elementary and Secondary Education.

ATTACHMENT 1

SCOPE OF SERVICES

The Scope of Services will include the following:

- Survey the courtyard/playground area, using a 20-foot grid at Hubert Wheeler School, using a level with vernier.

- Collect 10 surface soil composite samples from the grassy areas surrounding the asphalt covered playground area. The individual composite samples will be collected from approximate 1600 square foot areas using the established grid to mark the sampling locations, and will consist of a minimum of 5 aliquots each.

- Submit the surface soil composite samples to an analytical laboratory for quantitative analyses of semi-volatile organic compounds and total lead.

- Decontaminate sampling equipment between sampling events, using a trisodium phosphate wash solution, rinsing with de-ionized distilled water, rinsing with a 10% Nitric Acid solution, and a final rinse with deionized distilled water. The decontamination water will be containerized in 55-gallon drums, sampled to determine disposal options, and disposed with the appropriate disposal facility.

- Subcontract with EnTech Engineering, Inc. to provide services related to Infrared Thermography and Ground Penetrating Radar Surveys of the site.

- Coordinate Subcontractor project services.

- Rent GEM GSM-19 Magnetometer/Gradiometer.

- Obtain readings for both the magnetic field and the magnetic gradient at 10-foot spacings across the established grid using GEM GSM-19 Magnetometer/Gradiometer.

- Plot the total field and magnetic gradient on a site plan of the courtyard area, identifying those areas exhibiting magnetic anomalies.

- Perform an infrared thermographic investigation of the courtyard area providing still thermographs from real time data collected on video tape.

- Perform a ground penetrating radar survey of the courtyard area. The initial grid pattern will be 20 feet but may be reduced to obtain better resolution.

- Review infrared thermographic and ground penetrating radar data supplied by the subcontractor.

ATTACHMENT 1

SCOPE OF SERVICES
- Continued -

- Plot infrared thermographic and ground penetrating radar data on a site plan of the courtyard area, identifying those areas exhibiting potential subsurface anomalies.

- Subcontract with Rich Gullet and Sons of Pacific, Missouri to perform test pit excavations.

- Perform test pit excavations in the vicinity of apparent subsurface anomalies identified by the geophysical technologies.

- Monitor the test pit excavations for volatile organics using a Microtip Photoionization Detector (PID).

- Excavate and Overpack a maximum of 15 drums encountered in the test pit excavations. The drums will be temporarily stored on site within the fenced enclosure recently installed at the site around the courtyard/playground area.

- Collect samples from each of the drums removed from the excavation. The samples will be submitted for analytical testing to determine disposal options for the drummed wastes. The analyses will include TCLP-metals, TCLP-pesticides/herbicides, TCLP-volatiles, TCLP semi-volatiles, PCB's, reactive cyanides, reactive sulfides, total phenols, flash point, pH, and paint filter.

- If the wastes are determined to be hazardous, assist the Missouri Department of Secondary and Elementary Education in obtaining USEPA, and MDNR generator identification numbers.

- If the wastes are considered hazardous coal tar wastes and can be disposed via incineration, assist the Missouri Department of Elementary and Secondary Education in coordinating the permitting, transportation, and disposal of the wastes. If the wastes are hazardous wastes other than coal tar or coal tar contaminated with other materials which significantly affect the ability to incinerate the waste (i.e. heavy metal or high chloride content), prepare a revised proposal and cost estimate for disposal of the waste.

- Collect one soil sample from each test pit excavation. The samples will be collected from soils encountered in the vicinity of buried drums or wastes, or at the base of the excavation if buried wastes are not encountered in the excavation. If wastes are encountered in the excavation the soil samples will be submitted for analyses to determine if contaminated soils exhibit hazardous characteristics or qualify for special waste designation. The analyses will include TCLP-metals,

ATTACHMENT 1

SCOPE OF SERVICES
- Continued -

TCLP-pesticides/herbicides, TCLP-volatiles, TCLP semi-volatiles, PCBs, reactive cyanides, reactive sulfides, total phenols, flash point, pH, and paint filter. In addition, each soil sample collected from the test pit excavations will be analyzed for semi-volatile organics and total lead regardless of weather or not drums or buried wastes are encountered in the excavations. If PID readings of soils removed from the test pit excavations indicate volatile organics are present, the analytical testing for the soil sample collected from the excavation will include volatile organics analyses.

- Backfill each test pit excavation with the soil removed from the excavation. If additional soil is needed to bring the excavation to grade, clean soil fill will be obtained and used to cap the excavation. The fill material will not be compacted.

- Prepare a report documenting the results of the surface soil sampling, infrared thermography, ground penetrating radar, magnetometer/gradiometer survey, and test pit excavations. The report will include site plans depicting infrared thermographic, ground penetrating radar, magnetic data, and test pit excavations.

- Include with the report a disposal plan and cost estimate for the drums removed from the test pit excavations, and a Remedial Investigation Work Plan and Cost Estimate for implementing the Remedial Investigation.

ATTACHMENT 2

UNIT RATE SCHEDULE
PLAYGROUND SITE RESTORATION
HUBERT WHEELER STATE SCHOOL
ST. LOUIS, MISSOURI

1. Personnel

Principal	=	$115.00 per hour
Project Manager/Geophysicist	=	85.00 per hour
Senior Staff	=	70.00 per hour
Staff	=	55.00 per hour
Technician	=	40.00 per hour
Drafter	=	35.00 per hour
Word Processor	=	32.00 per hour

2. Decontamination

Decontamination of Surface Soil Sampling Equipment	=	$10.00 per sample
55-gallon drums	=	50.00 per drum

3. Analytical Laboratory Testing

Priority Pollutant Semi-Volatile Organics	=	$380.00 per sample
Priority Pollutant Volatile Organics	=	188.00 per sample
Total Lead	=	15.00 per sample
Chemical Oxygen Demand	=	15.00 per sample
Total Suspended Solids	=	10.00 per sample
TCLP Semi-Volatile Organics	=	615.00 per sample
TCLP Volatile Organics	=	335.00 per sample
TCLP Metals	=	165.00 per sample
TCLP Pesticides and Herbicides	=	432.00 per sample
PCB's	=	70.00 per sample
Reactive Cyanides and Sulfides	=	60.00 per sample
Total Phenols	=	25.00 per sample
Flash Point	=	20.00 per sample
pH	=	7.00 per sample
Paint Filter	=	7.00 per sample
10% Handling Fee		

4. Subcontractor Services

Subcontract Services Infrared Thermography	=	$3,922.00 per day
Subcontract Services Ground Penetrating Radar	=	5,834.00 per day
Subcontract 755 Ford Hoe and Operator	=	496.00 per day
Subcontract Laborer	=	272.00 per day
Placement of Clean Soil Fill	=	50.00 per yard
Subcontractor Level C Protective Equipment Surcharge	=	110.00 per man day
Subcontractor Level B Protective Equipment Surcharge	=	165.00 per man day
10% Handling Fee		

ATTACHMENT 2
- Continued -

5. **Equipment Rental and Use Fees**

Micro Tip Photoionization Detector	=	$70.00 per day
GEM GSM-19 Equipment Preparation Charge	=	175.00 per event
GEM GSM-19 Equipment Rental	=	175.00 per week
Shipping Charges GEM GSM-19 Equipment	=	226.00 per event
10% Handling Fee		

6. **Waste Handling and Disposal**

85-Gallon Overpack Drums	=	$120.00 per drum
Soil Transportation and Disposal via Incineration of Coal Tar Wastes (Hazardous)	=	420.00 per 55-gal. drum
Transportation and Disposal via Sanitary Landfill (Special Waste)	=	175.00 per 55-gal. drum
Transportation and Disposal of Hazardous Decontamination Water	=	375.00 per 55-gal. drum
Transportation and Disposal of Special Waste Decontamination Water	=	200.00 per 55-gal. drum

File.

HUBERT WHEELER STATE SCHOOL

PA/SI REFERENCE 36

STATE OF MISSOURI

DEPARTMENT OF NATURAL RESOURCES

MEMORANDUM

DATE: June 15, 1994

TO: Julie Bloss, Environmental Specialist, HWP, DEQ

FROM: Edith Starbuck, Geologist, Environmental Geology Section, DGLS

SUBJECT: Sanborn Maps for Carondolet Coke and Hubert Wheeler sites

The maps that I mailed to you on May 24, 1994 are copies of portions of Sanborn maps. They cover the areas of the Carondolet Coke site and the Hubert Wheeler site in St. Louis City. Using them will require some piecing together. There is some overlap of each map coverage so that this may be more easily accomplished.

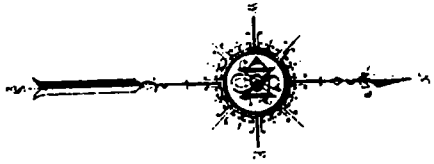
Maps for the Hubert Wheeler area were available for the years 1903 and 1926. I copied only the 1926 version because the same clay plant appears on both years maps. The plant is only slightly smaller on the 1903 version, and Hampton Avenue does not appear on the 1903 map, making it difficult to see what area you are looking at.

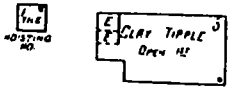
Maps for the area around the Carondolet Coke site are available for the years 1916 and 1938. There did not appear to be any development on the Carondolet Coke site on the earlier version.

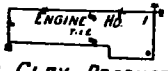
I hope these maps will be useful to you. Please let me know if I can be of further assistance.

HAMPTON AV.

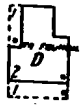
4645



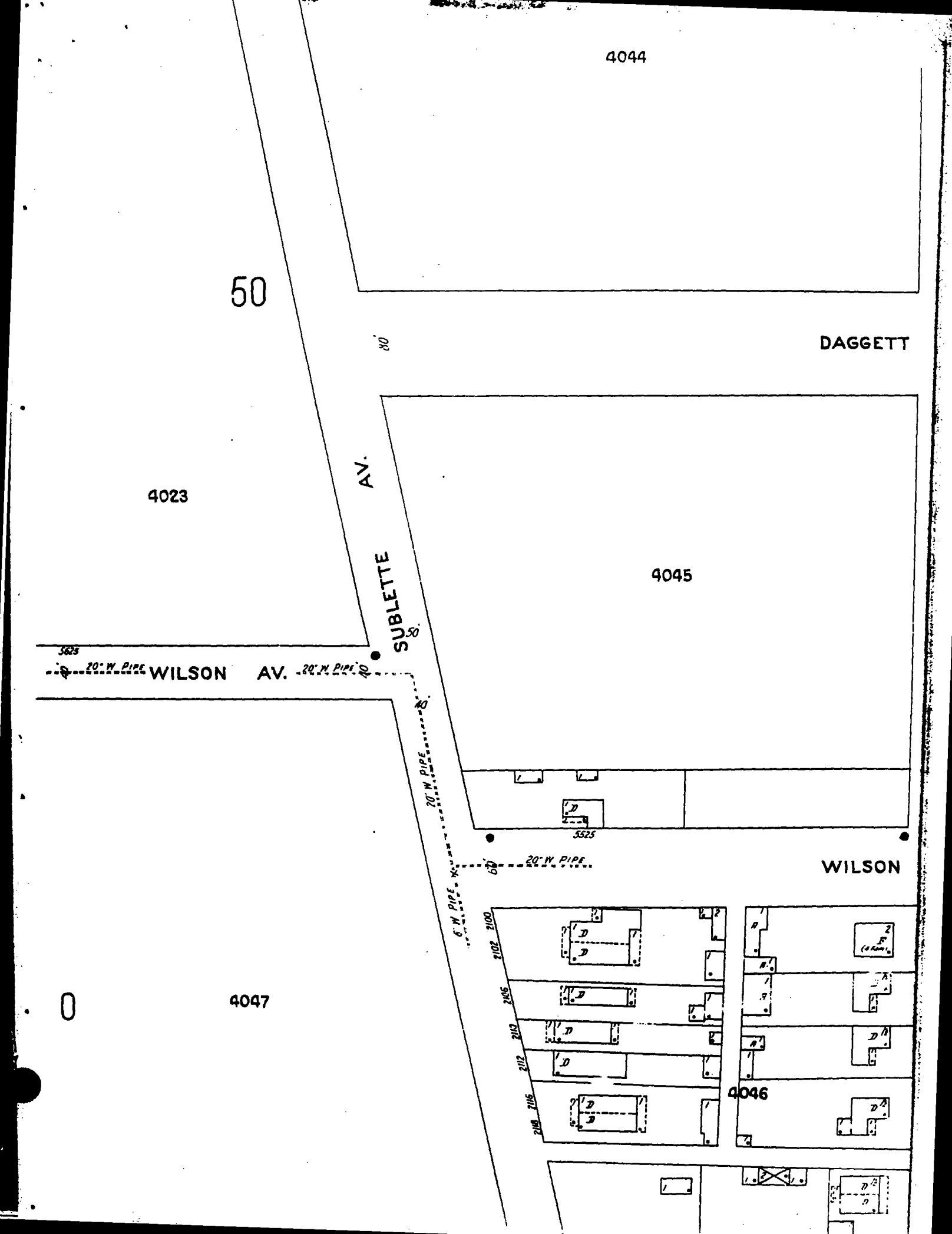


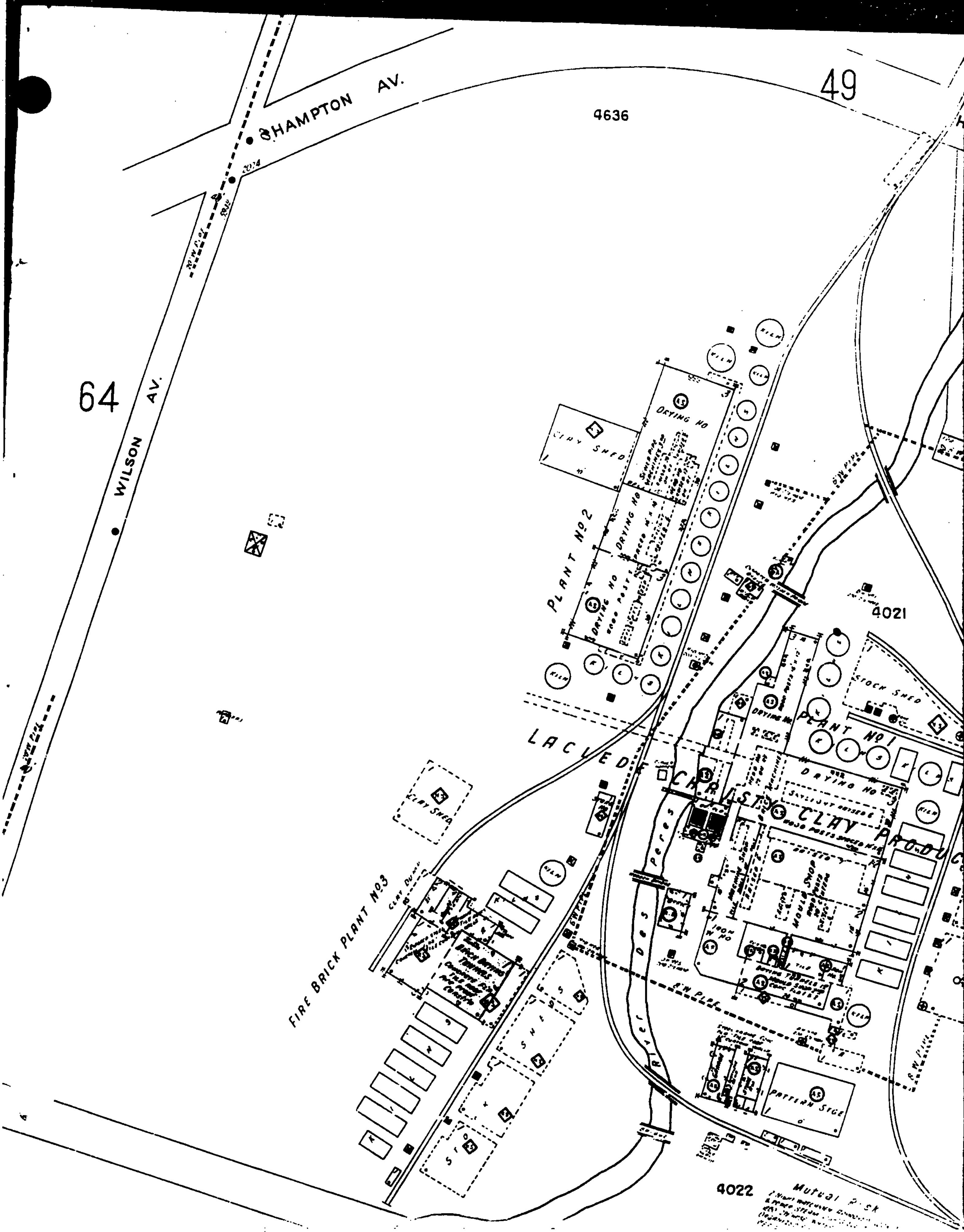


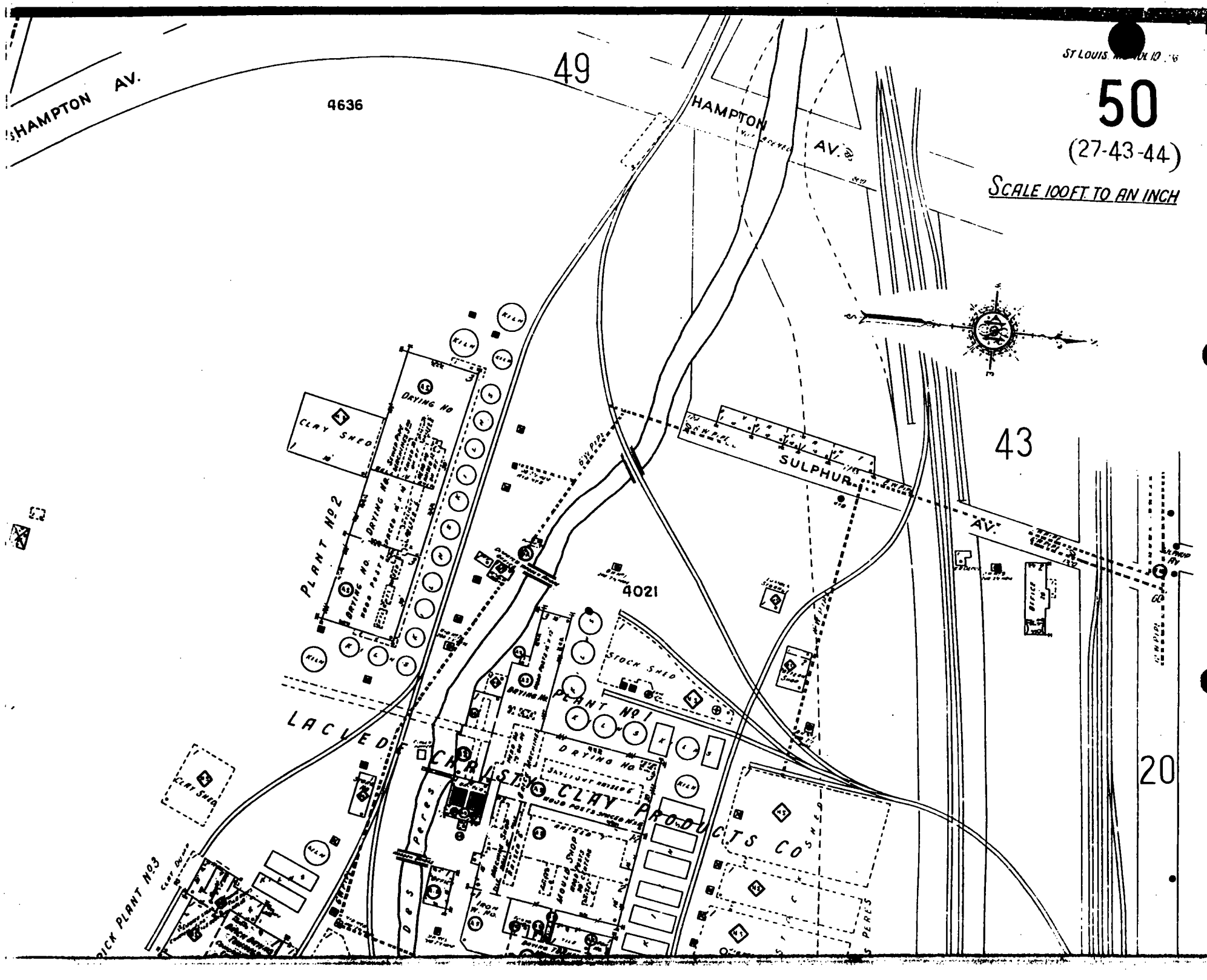
LACLEDE CHRISTY CLAY PRODUCTS
CLAY MINE

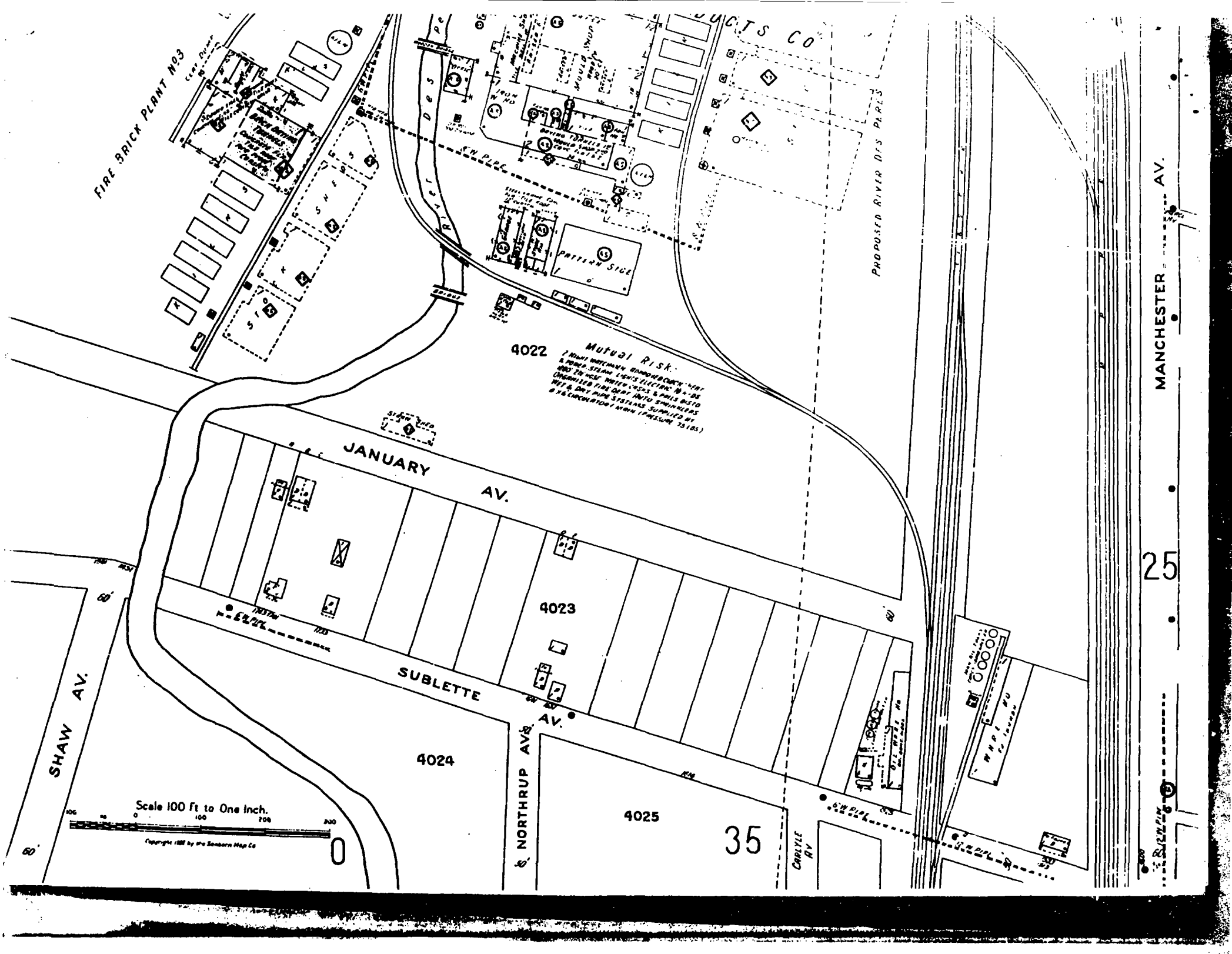


WILSON AV.


4044
50
DAGGETT
4023
AV.
SUBLETTE
4045
5625
20" W. PIPE
WILSON
AV.
20" W. PIPE
40
20" W. PIPE
5525
20" W. PIPE
WILSON
6" W. PIPE
2100
2102
2105
2110
2112
2116
4046
0
4047


49
4636
HAMPTON AV.
64
WILSON AV.
PLANT NO 2
DRYING NO
CLAY SHED
4021
STOCK SHED
PLANT NO 1
LACLEDE
CHRISTY CLAY PRODUC
MOULD SHOP
FIRE BRICK PLANT NO3
CLAY SHED
SHEDS
Des Peres River
PATTERN STGE
4022


HAMPTON AV.
49
4636
HAMPTON AV.
50
(27-43-44)
SCALE 100 FT. TO AN INCH
43
SULPHUR AV.
20
4021
PLANT NO 2
PLANT NO 1
PLANT NO 3
LACLEDE
CARONDELET CLAY PRODUCTS CO
DRYING NO
CLAY SHED
KILN
STOCK SHED
OFFICE
SHOP
PRESS


FIRE BRICK PLANT NO 3
DUCTS CO
PROPOSED RIVER DES PLAINES
MANCHESTER AV.
JANUARY AV.
SUBLETTE AV.
SHAW AV.
NORTHRUP AVS.
CARLYLE AV
4022
4023
4024
4025
Mutual Risk.
Scale 100 Ft to One Inch.
0
25
35

DEPARTMENT OF NATURAL RESOURCES
Division of Environmental Quality

PA/SI REFERENCE 37

TELEPHONE OR CONFERENCE RECORD

FILE: [redacted]

DATE: June 30, 1994

TELEPHONE:

Incoming ( )
Outgoing ( )

CONFERENCE:

Field (X)
Office ( )

SUBJECT: Site Visit to Observe Magnetometer Survey by Geotechnology

PERSONS INVOLVED:

NAME	REPRESENTING
Julie A. Bloss	MDNR/HWP/Superfund
Joe Trunko	MDNR/St. Louis Regional Office
Sam Brenneke	Geotechnology
Kenny Hemmen	Geotechnology
Louis Buryn	Building Principal/Hubert Wheeler State School
Terry Box	Area Director/Division of Elementary and Secondary Education

SUMMARY OF VISIT:

Mr. Trunko and I arrived on-site around 10 a.m. Mr. Brenneke introduced himself and later, Mr. Hemmen. Mr. Trunko and I walked inside the chain-link fence (Cutter Fence & Door, 831-9470) to observe the area of tar waste. I took three pictures (number 3, number 4, and number 5) of the tar waste. The tar was fresh since my visit in January, but the location of the affected area was the same, where the sidewalk meets the asphalt on the eastern side of the asphalt playground. I took picture number 6 looking southeast toward the school.

Mr. Brenneke told us that Geotechnology was planning surficial soil sampling for July 7-8, 1994. Infrared and ground penetrating radar surveys have been planned for the week of July 18, 1994. Mr. Brenneke left the site around 10:30 a.m.

Mr. Trunko and I walked around the perimeter of the site. We noted that there is a sewer on-site, outside of the fenced playground area, but within the property boundary on the northern side. This sewer pipe drains toward the highway, with possible flow to a depressed area along the northeastern edge of the property. I took picture number 7 of the sewer drain looking south/southeast. There was no flow or discoloration associated with the sewer drain.

At least five residential properties border the school to the northeast; eight to the southeast. Deaconess Hospital borders the affected area on the western side. People were observed in the parking lot of the hospital, within 200 feet of the contaminated area.

I took pictures number 8, number 9, and number 10 of Mr. Hemmen taking magnetometer readings. Mr. Hemmen was using a GSM-19, Overhauser Memory Magnetometer from Terraplus, Geophysical and Radon Gas Instruments, 625 West Valley Road, Littleton, Colorado 80124; (303) 799-4140.

Mr. Trunko and I spoke briefly with both Mr. Buryn, Building Principal, and Mr. Box, Area Director. Both said that Mr. Causey, Superintendent of Schools (751-4427), had held a meeting regarding the playground remediation about a month ago for concerned parents and staff. Six parents and about 20 staff members were in attendance. Of these, one concerned parent had discussed the situation with her doctor. The doctor's office first contacted the school, and then the school referred the call to the Missouri Department of Natural Resources. I told both Mr. Buryn and Mr. Box that this was fine and that we had sent the doctor a copy of the preliminary assessment report.

Mr. Hemmon completed surveying around 12:30 p.m. Mr. Trunko and I asked him several questions about the equipment and his thoughts regarding the survey. Mr. Hemmon said that both the fence and the storm gutters on the school building would make the results more difficult to interpret in those areas. Mr. Hemmon said that he had detected high readings near the northwest edge of the property, even allowing for the piping near the sewer drain. He said that we would need to contact Mr. Brenneke to obtain a copy of the results of the survey.

Julie A. Bloss
Environmental Specialist
Superfund Section

JAB:bt

c: Brian Allen, Environmental Services Program
Joe Trunko, St. Louis Regional Office
Al Wallen, Hazardous Waste Program

UBERT WHEELER STATE
HOOL

PA/SI REFERENCE 38

MISSOURI DEPARTMENT OF NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL QUALITY
ENVIRONMENTAL SERVICES PROGRAM

SITE INSPECTION SAMPLING PLAN
Hubert Wheeler State School Site
5707 Wilson Avenue
St. Louis, Missouri
July 5, 1994

INTRODUCTION

At the request of the MDNR (Missouri Department of Natural Resources), HWP (Hazardous Waste Program), Site Evaluation Unit, the MDNR, ESP (Environmental Services Program) will conduct a site inspection sampling event at the Hubert Wheeler State School site located at 5707 Wilson Avenue in St. Louis, Missouri. Information learned from field observations and sampling will be used to assist the HWP in scoring the site's potential as a hazardous waste site under the federal CERCLA (Comprehensive Environmental Response, Compensation, and Liability Act) Hazard Ranking System.

The site is located in the City of St. Louis, southeast of the intersection of I-44 and Hampton Avenue. The site can be entered by following Hampton Avenue south to Wilson Avenue, then east on Wilson Avenue. The site is located on the north side of the street.

SITE DESCRIPTION AND HISTORY

The Hubert Wheeler State School serves severely developmentally disabled students. During recent years, a black tar-like material has occasionally oozed from the ground surface in the courtyard area, at the northwest corner of the school property. The school placed asphalt paving over the courtyard area to minimize problems associated with the tar-like material. The oozing continues to surface in several areas, though, most pronounced in an area where a concrete sidewalk abuts the asphalted area (now a playground). School maintenance personnel reported the black material to be "flowing" during excavation for the concrete walkway at a depth of three feet. At least one drum was also discovered during the walkway excavation.

Historical operations at the site include use as a storage area by a coke and foundry supply as well as being the location of a fire brick manufacturing company. Reports have also been relayed that the school may be built upon demolition fill from area construction activities and possibly from demolition of buildings once used on-site.

The Division of Secondary and Elementary Education hired a consultant to conduct a subsurface assessment of the asphalt playground. Sampling conducted by the consultant has shown a significant lead level in the on-site soils and several volatile and semi-volatile organics (typical of coal-tar contamination). Further investigation is underway at present, and MDNR will be present to conduct site inspection sampling during planned investigation activities by the consultant to minimize disruption to the school.

SAMPLING STRATEGIES

A judgmental sampling approach will be utilized at the Hubert Wheeler State School. Personnel will collect approximately 10 surface soil grab samples from the 0-2 ft depth. Background samples will be collected from an area upgradient of and away from the apparent contamination for comparison. The background soil sample will be collected from an area similar to what is present on-site and from a similar depth. Exact locations for the soil samples will be determined in the field based on observations.

Based on previous sampling conducted and the history of the site, all samples will be submitted for volatile organics, BNA (base neutrals and acid extractables), and total metals (As, Ba, Cd, Cr, Hg, Pb, Se, Ag) analyses. If a soil sample is determined to have any total analyte levels which are at least 80% of 20-times their TCLP (Toxicity Characteristic Leaching Procedure) limit, TCLP analysis will be conducted on that sample.

Please refer to Appendix A for a map of the site.

Sampling Technique

Soil Grabs:

Soil grab samples will be collected using a combination of clean stainless steel spoons, clean stainless steel trowels, and clean stainless steel bucket augers. The very top layer of soil will be scraped off, or the asphalt layer removed, and the soil immediately beneath will be collected from the 0-2 foot depth. VOA samples will be collected by transferring the soil directly to sample containers. Subsequent aliquots will be transferred to clean aluminum foil pans, homogenized, and placed into sample containers.

Miscellaneous Grabs:

Field personnel will attempt to collect a grab sample of the tar-like material. Other equipment will be available to aid in sample collection if needed.

Sample Collection Order/Quantity:

Sampling personnel will collect the aliquots for each sample in the following order, based on parameter stability: volatile organics, BNA, and total metals.

The approximate number of samples to be collected are as follows (subject to change based on field conditions and observations):

Surface soil grabs - 11 Miscellaneous grabs - 2

The above estimate includes QA/QC (Quality Assurance/Quality Control) samples.

Sample Container and Preservation Requirements:

Soil/Miscellaneous samples:

Parameter	Container(s)/Volume	Preservative(s)	Holding Times
VOA	One 4 oz glass jar	Cool, Zero headspace	14 days
Base Neutrals/ Acid Extractables	One 4 oz glass jar	Cool, solvent rinsed container	7 days to extract
Total metals	One 4 oz glass jar	Cool	6 months

DATA QUALITY OBJECTIVES

To help ensure precise, accurate, representative, complete, and comparable data is achieved, ESP field personnel will consistently use the following protocols for sampling conducted at the Hubert Wheeler State School site.

Clean disposable gloves will be worn by sampling personnel for each sample collected.

Clean or field decontaminated equipment will be utilized for all sample collections.

Field decontamination, if required, will be accomplished by washing the equipment using a non-phosphate detergent and potable water solution, followed by a tap water rinse, a 10% nitric acid rinse, a deionized water rinse, a methanol rinse, a hexane rinse, and a final deionized water rinse. Equipment will be stored on clean plastic, allowed to air dry, and wrapped in foil until used again. If it is required that field decontaminated equipment be used for sampling, an equipment rinseate blank will be collected to ensure no cross contamination has occurred between samples.

At least one duplicate sample will be collected for each media sampled. Duplicate samples will be filled alongside their true sample and collected simultaneously using the same technique as is used to collect the true sample.

All samples will either be collected in pre-preserved sample containers or preserved in the field as is appropriate.

Each sample will receive a numbered tag and the corresponding number entered onto a chain-of-custody form indicating the location, date, and time of collection as well as parameters to be analyzed. Samples will be stored and transported on ice in coolers. Custody of the samples will be maintained by ESP field personnel until relinquishing the samples to personnel at the state's environmental laboratory within the Environmental Services Program in Jefferson City for analyses.

SITE SAFETY

A site safety plan has been prepared and is attached as Appendix B. All personnel involved with sampling will be required to read and initial the safety plan prior to starting work.

REPORTING

The analytical results of the samples collected will be presented, along with methods of sample collection and observations, in a formal report to be submitted to the HWP.

Submitted by:

Brian J. Allen
Environmental Specialist
Superfund Unit
Environmental Services Program

Date: 7-6-94

Approved by:

Douglas N. Edwards
Supervisor
Field Services Section
Environmental Services Program

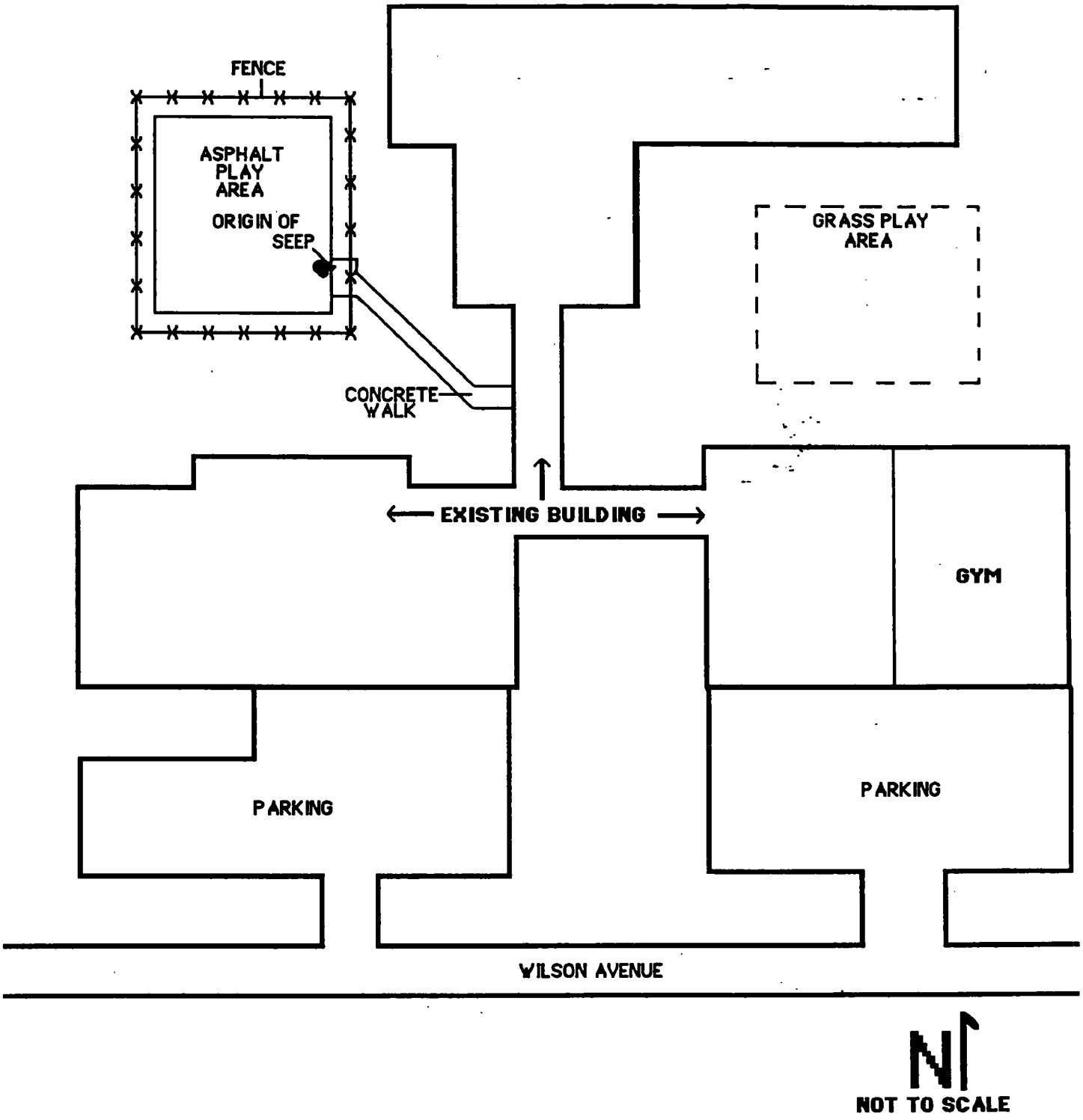
DE:bad

c: Kris Davidson, Environmental Specialist, HWP
Bob Eck, Regional Director, SLRO

APPENDIX A

Site Map
Hubert Wheeler State School
5707 Wilson Avenue
St. Louis, Missouri

APPENDIX A
SITE MAP
HUBERT WHEELER STATE SCHOOL



APPENDIX B

Site Safety Plan
Hubert Wheeler State School
5707 Wilson Avenue
St. Louis, Missouri

SAFETY OUTLINE
(Use back of page to complete items)
(Attach pertinent documents)

Page 1 of 1
County: St. Louis City
Site/Location: 5707 Wilson Avenue

Date Prepared: 7/6/94 Date Used: 7/7/94

		Initials		Initials
1.	Prepared by: Brian Allen	BJA		
	for: [signature]	[signature]		

2. Purpose of Activity and Procedures: To collect samples for analyses to be used in scoring the site's potential as a hazardous waste site.

3. Material(s): Soil, tar-like material.

4. Possible Hazards: Contact with hazardous materials associated with possible coal-tar wastes. Heat stress.

5. Personnel Monitoring: All sampling personnel will be involved in a medical monitoring program and be current. Air monitoring will be conducted for volatile organic vapors during sampling. If vapors are encountered three times above background, personnel will be required to leave the area until levels decrease.

6. Site Monitoring: Air monitoring will be conducted for volatile organics.

7. Protective Level: A B C XXD

8. Protective Gear:

	Use	Expended		Use	Expended
Steel toed rubber boots	X		full face respirator	X	
gloves, latex, inner	X		resp. cart.	X	
gloves, nitrile, outer	X				
suit, tyvek	X				
tape joints	X				
SCBA					

9. Decontamination Procedures: Personnel will utilize boots, gloves, and protective clothing during sampling. Personnel will wash hands upon departing the site and properly containerize and dispose of spent equipment.

10. Precautions, Site Control, Emergency Exit: Site is enclosed by a fence.

11. Hospital Location: Adjacent to site Ambulance # 911
Police#: 911, Fire#: 911, Poison Control#: 911

ROBERT E. BARTMAN
Commissioner of Education

HUBERT WHEELER STATE SCH

PA/SI REFERENCE 39

DEPARTMENT OF ELEMENTARY AND SECONDARY EDUCATION
P.O. BOX 480
JEFFERSON CITY, MISSOURI 65102-0480

August 11, 1994

TO: Julie Bloss

FROM: Ron Littich

SUBJECT: Tar Boil Investigation Project
Hubert Wheeler State School

Attached are photocopies of information contained in our property file and project file on the subject school that you flagged during review of the files on August 10, 1994.

If you have any questions, please call me at 751-8296.

rn
Attachments
c: Dewayne Cossey
Project File

ROBERT E. BARTMAN
Commissioner of Education

DEPARTMENT OF ELEMENTARY AND SECONDARY EDUCATION
P.O. BOX 480
JEFFERSON CITY, MISSOURI 65102-0480

May 11, 1994

Parents and Staff
Hubert Wheeler State School

Dear Friends:

On May 19, 1994, the Parent Teacher Organization (PTO) will conduct their last regularly scheduled meeting for this school year. I want to extend a personal encouragement to you to attend that meeting.

The PTO has allowed me time on their meeting program to present information about the findings of a recent subsurface soil analysis we had conducted of the school grounds. Those findings did result in our having to install fencing to restrict use of the playground area. My presentation will include sharing information about results of the laboratory analyses of the soil samples, associated risk factors, what is known about the site now, further studies to be conducted, and plans for remediation.

Although the site has not been determined to be hazardous to the health of students and staff, the subsurface soil sample results were viewed as significant enough, by Department of Health and Department of Natural Resources standards, to exercise the cautions we have implemented and conduct further testing of both subsurface and surface soils before access to the playground area is again allowed.

The meeting is scheduled to begin at 7:00 p.m. on Thursday evening, May 19, 1994, and will be conducted in the school gymnasium. I look forward to seeing you there.

Sincerely,

Dewayne E. Cossey

Dewayne E. Cossey, Superintendent
State Schools for Severely Handicapped

DCD

6-4404

DEC

ATTORNEY GENERAL OF MISSOURI
P. O. Box 899
Jefferson City, Missouri 65102
314/751-3321

TO: Heidi

FROM: Ed S (751-8825)

DATE: 5-12-94

RE: Hubert Wheeler PTO Meeting

OUR DNR LAWYER THINKS DEWAYNE SHOULD APPEAR ALONE & WITHOUT ANY DNR PEOPLE PRESENT. IT WOULD REQUIRE SEVERAL DNR PEOPLE TO DO THIS CORRECTLY — FROM AIR, WATER, HAZARDOUS WASTE PROGRAMS, NOT TO MENTION SOMEONE FROM DEPARTMENT OF HEALTH.

IT IS RECOMMENDED THAT DEWAYNE NOT GUESS AT ANY ANSWERS but that he WRITE DOWN THE QUESTIONS AND THEN SUBMIT them LATER TO DNR OR DOH.

Thanks

TOTAL P.01

MINUTES

Pre-Design Meeting
Friday, July 11, 1993
11:00 a.m.

Attendees: Mr. Gerald Bonnot; State of Missouri Division of Design and Construction
Mr. Ron Littich; State of Missouri Department of Secondary Education
Mr. Kevin Hultberg; Hubert Wheeler School
Mr. Ed Alizadeh, P.E.; Geotechnology, Inc.

I. Mr. Bonnot initiated the meeting by expressing his desire to complete the initial assessment without MDNR involvement. He would like to prevent any release of information until the analytical results are available such that the scope of the problem is better understood. Mr. Littich indicated that the Department of Secondary Education has their own attorney who typically handles public relations; he will check with that person regarding how any press dealings will be handled. It is anticipated that the week when drilling is accomplished is likely to draw the most attention to the site so a plan for handling the press must be established prior to drilling.

II. Mr. Bonnot reviewed the general contract language with Mr. Alizadeh. Mr. Bonnot emphasized that written authorization is required to amend costs or change the scope of services. The unit rates provided in the contract are applicable for any changes, however, the changes must be approved in writing. We discussed the problems which might be encountered with this restriction. For example, the scope calls for borings to a depth of 10 feet, however, contamination may still be present requiring deeper borings. Mr. Bonnot indicated that Geotechnology, Inc. would need to contact the state to obtain written authorization for deeper borings. Mr. Littich and Mr. Bonnot discussed whether the state would have a representative on sight during drilling activities; this issue was not resolved.

III. Mr. Littich's department will identify the location of storm sewers on the site and they will clean the storm sewer lines before Geotechnology's drilling.

IV. Mr. Littich collected a sample of the "coal tar" material from the pavement and Mr. Bonnot took the sample for analysis by a state contracted lab. The results from this sample are desired to assist in responding to the press during drilling if this becomes necessary.

V. The drilling is scheduled for the week of August 23, 1993. The sampling plan will be provided (4 copies) to Mr. Bonnot by July 30, 1993 with a carbon copy to Mr. Littich. They will complete their review within two weeks. Mr. Littich should be carbon copied on all correspondence.

VI. Several chunks of concrete are present in the grass areas of the site. It is suspected that concrete rubble may be present under several areas of the site which may make drilling

difficult. If drilling conditions require a change in the scope of services, this must be accomplished in writing.

VII. Mr. Littich will check his files to see if he has photographs of the site prior to paving the playground.

VIII. At the end of the project, the state would like a general idea of the type of remediation required and the magnitude of the cost. Mr. Littich will have to go to the legislature and seek additional budget for remediation. Geotechnology, Inc. will contact MDNR after analytical results are available to discuss the testing accomplished and different remediation scenarios.

STATE OF MISSOURI
OFFICE OF ADMINISTRATION
DIVISION OF DESIGN AND CONSTRUCTION
P.O. BOX 809
JEFFERSON CITY, MISSOURI 65102

ACCOUNT NO: 523-[illegible]6-0992

PROJECT NO: 05-523-93-0001(A)

AGREEMENT BETWEEN OWNER AND CONSULTANT FOR SPECIAL SERVICES

ORIGINAL

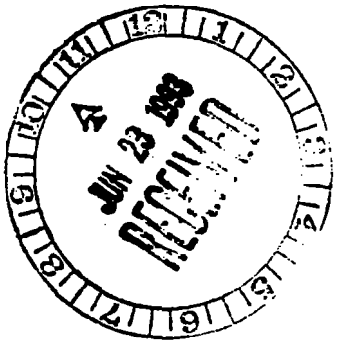
THIS AGREEMENT, made this Twenty-Eighty day of May in the year of Nineteen Hundred and Ninety-Three between the State of Missouri, hereinafter called the Owner, represented by the Office of Administration, Division of Design and Construction, on behalf of Department of Elementary & Secondary Education,

and Geotechnology, Inc.
2258 Grissom Drive
St. Louis, MO 63146

hereinafter called the Consultant.

PROJECT

Title: Restoration of Playground
Hubert Wheeler State School
St. Louis, Missouri



SCOPE OF WORK

It is the intent of the Owner to determine the type and extent of contamination under the playground at Hubert Wheeler State School.

COMPENSATION

THE CONSULTANT shall provide professional services for this Project in accordance with the Terms and Conditions of this Agreement and THE OWNER shall compensate the Consultant, in accordance with the Terms and Conditions of this Agreement, as follows:

BASIC SERVICES: Compensation for Basic Services shall be computed on the basis of:

A Not-to-Exceed price of Thirty-One Thousand Nine Hundred Dollars and No Cents ($31,900.00), based on the unit prices indicated in the Additional Services section.

ADDITIONAL SERVICES: Compensation for Additional Services which must be authorized in writing by the Owner's Representative shall be computed as follows:

Personnel:

Principal	$115.00 per hour
Project Manager	$ 85.00 per hour
Staff	$ 55.00 per hour
Draftsman	$ 35.00 per hour
Word Processor	$ 32.00 per hour

REIMBURSABLE EXPENSES: Compensation for Reimbursable Expenses shall be limited to those items listed below and shall be computed as follows:

Drilling:

Mobilization, demobilization, decontamination pad	$1,500.00 Lump Sum
Soil drilling (0-50 feet)	$ 10.00 l.f.
4-1/4" HSA (51-100 feet)	$ 14.00 l.f.
Split spoon samples (0-50 feet)	$ 10.00 each
Split spoon samples (51-100 feet)	$ 20.00 each
Hydropunch samples*	$ 75.00 each
Coring set-up	$ 75.00 each
NX coring	$ 35.00 l.f.
Grout backfill	$ 5.00 l.f.
Standby time**	$ 110.00 per hour
Decontamination time	$ 125.00 per hour
Steam cleaner	$ 100.00 per day
55 gallon drums	$ 50.00 each

Analytical Laboratory Testing:

Priority pollutants, metals	$ 230.00 each
Priority pollutants, volatiles	$ 250.00 each
PCB and pesticides	$ 145.00 each
Priority pollutants, semi-volatiles	$ 440.00 each
Dioxin	$ 295.00 each
10% Handling Fee	

* Includes expendable items and time to insert and retrieve tool.

** Includes time required for groundwater inflow to Hydropunch, water hauling, staging waste drums and downtime as directed by client.

C 'ULTANT'S PAYMENT SCHEDULE

A. **BASIC SERVICES**

Payments for Consultant's Basic Services shall be made as follows: **Monthly upon receipt by the Division of Design and Construction of itemized invoices and receipts for laboratory tests provided.**

B. **ADDITIONAL SERVICES AND/OR REIMBURSABLE EXPENSE**

Payments for Reimbursable Expenses and/or Additional Services approved in accordance with the provisions of Article I of the Agreement shall be made monthly upon presentation of the Consultant's statement of services rendered.

C. **PAYMENTS, SUMS WITHHELD**

The Owner's Representative reserves the right to withhold payments to the Consultant for losses connected with the Project caused by the errors, omissions, or wrongful acts of the Consultant in performing his duties under this Agreement. Upon receipt of written notice of the Owner's Representative's intention to withhold payments, the Consultant may request the Owner's Representative to instead seek payment against the Consultant's insurer by notifying the Owner's Representative by certified mail, within seven days of receiving the notice of intent to withhold payments. The Consultant's failure to contact the Owner's Representative shall be deemed a waiver of this option. In no event shall the withholding of payments under the terms and conditions of this paragraph be deemed or construed as a waiver or abrogation of the Owner's Representative's right to pursue payment or redress for any claim it may have against the Consultant under this Agreement. No deductions shall be made from the Consultant's compensation on account of penalty, liquidated damages, or other sums withheld from payments to contractors.

CONSULTANT'S PROJECT COMPLETION SCHEDULE

The schematic sampling plan shall be submitted to the Owner within Fourteen (14) consecutive calendar days after the pre-design meeting.

The assessment phase shall be completed and the final assessment report submitted to the Owner within Sixty (60) consecutive calendar days after the Owner approves the schematic sampling plan.

TERMS AN)NDITIONS OF AGREEMENT BE EN OWNER AND CONSULTANT

ARTICLE I

CONSULTANT'S SERVICES

A. **BASIC SERVICES:**

The Consultant shall determine and report to the Owner the type and extent of contamination under the playground at Hubert Wheeler State School by completion of the following:

- Obtain and review aerial photographs of the site back to 1960.
- Obtain and review title history of the site.
- Coordinate and attend a meeting with representatives from the MDNR Superfund Program and the Owner.
- Develop a schematic sampling grid, which shall include sampling grid, health and safety plan, and sampling plan and submit to the Owner for acceptance.
- Conduct sampling using a truck-mounted drill rig; assume 10 borings to a depth of 10 feet each.
- Submit soil samples to an analytical laboratory for analysis of priority pollutants.
- Prepare an assessment report and submit four (4) copies of it to the Owner for acceptance.

B. **ADDITIONAL SERVICES:**
Additional Services shall be provided only upon prior written authorization by the Owner's Representative and shall be paid for by the Owner as hereinbefore provided under Compensation. Additional Services may be authorized for work which is beyond the Consultant's Basic Services.

ARTICLE II

CONSULTANT'S RESPONSIBILITIES

A. The Consultant agrees to accept the Owner's program and budget and further agrees to use reasonable skill and care to accomplish said Project within the intent of the program and established budget. In the event the Consultant determines that the Project cannot be accomplished within the established budget, he shall notify in writing the Owner's Representative so that the Project scope can be reviewed and modified if necessary.

B. The Consultant shall use reasonable care to verify that all relevant information supplied to him by the Owner or Owner's Representative is correct and accurate.

C. The Consultant shall provide evidence of an appropriate professional liability insurance policy, with minimum limits of $100,000.00.

ARTICLE III

OWNER'S RESPONSIBILITIES

A. The Owner shall provide information regarding his requirements for the Project as well as information required of him in order to promote the orderly progress of the Work.

B. If the Owner observes or otherwise becomes aware of any fault or defect in the Project or nonconformance with the Contract Documents, he shall give prompt written notice thereof to the Consultant.

C. All of the above items relating to Owner's responsibilities shall in no way abrogate the Consultant's responsibility.

ARTICLE IV

DIRECT PERSONNEL EXPENSE

A. Direct Personnel Expense is defined as the cost of salaries and includes mandatory and customary benefits such as insurance, sick leave, vacation, holiday, pensions and other such costs that relate to employees engaged on the Project by the Consultant.

B. Employees may include, but are not necessarily limited to, architects, engineers, designers, draftsmen, specification writers, stenographers, typists and other personnel engaged in consultations, research, design, document production or other Work pertaining to the Project.

C. Should Direct Personnel Expense be selected as the method of compensation, the Consultant will submit in writing to the Owner's Representative a complete list of all employees to be engaged on the Project along with a schedule of rates and benefits for those employees.

ARTICLE V

REIMBURSABLE EXPENSES

A. Reimbursable Expenses are defined as direct costs which may be in addition to the compensation for Basic and/or Additional Services and may include but are not necessarily limited to the following:

1. Printing costs associated with the Project.
2. Meals, lodging and transportation expenses incurred while traveling in connection with the Project.
3. Long distance telephone calls and telegrams made in connection with the Project.

4. The cost of other services requested by the Owner and performed by the Consultant.

B. The Consultant shall be paid only for those Reimbursable Expenses set out under Compensation for Reimbursable Expenses on page two (2) of this Agreement. Payment for said services shall be at direct cost to the Consultant unless specifically set out otherwise on page two (2) of this Agreement.

ARTICLE VI

CONSULTANT'S ACCOUNTING RECORDS

Records and receipts of the Consultant's Direct Personnel, Consultant and Reimbursable Expenses pertaining to the Project shall be kept on a generally recognized accounting basis and shall be available to the Owner or his authorized representatives upon request. The Owner's Representative reserves the right to withhold payment of any amounts owed to the Consultant unless or until said records and receipts are received and verified by him when requested.

ARTICLE VII

OWNER'S REPRESENTATIVE

For the purposes of this agreement, the Director, Division of Design and Construction, shall serve as the Owner's Representative. No work will be accepted, nor any payments made without approval by both the Owner and the Owner's Representative.

ARTICLE VIII

CONSULTANT'S COOPERATION

The Consultant agrees to perform his services under this Contract in such a manner and at such times so that the Owner and/or any contractor who has Work to perform, or Contracts to execute, can do so without unreasonable delay.

ARTICLE IX

OWNERSHIP OF DOCUMENTS

All documentation generated as an instrument of service is and shall remain the property of the Owner whether the Project for which it is prepared is continued or not. It may be used by the Owner on another like Project without approval of, or additional compensation to, the Consultant, provided that the Owner accepts professional architectural and engineering responsibility for any such additional use.

ARTICLE X

SUCCESSORS AND ASSIGNS

The Owner and the Consultant each binds himself, his partners, successors, assigns and legal representatives to the other party to this Agreement and to the partners, successors, assigns and legal representatives of such other party with respect to all covenants of this Agreement. The Consultant shall not assign, sublet or otherwise transfer his interest in this Agreement without the written consent of the Owner.

ARTICLE XI

DISPUTES AND DISAGREEMENTS

In order to prevent all disputes or disagreements between the parties to this Agreement in relation to the performance on the part of the Consultant, it is expressly agreed and understood that in case any controversy or difference of opinion shall arise between the parties as to quality, quantity or value of the Work, the decision of the Director, Division of Design and Construction, shall be final and binding on all parties. Nothing contained herein shall be interpreted to restrict either party's right to pursue litigation.

ARTICLE XII

TERMINATION

This Agreement may be terminated by the Owner's Representative upon mailing notice of termination to the Consultant at least seven (7) days in advance of the date of termination if the Consultant substantially fails to perform according to the terms and conditions of this Agreement in the opinion of the Owner's Representative or funds for the Project are not appropriated or are insufficient to proceed with the Project. The Owner's Representative may also terminate this Agreement by the same procedure at the end of any Phase or part thereof as set forth in this Agreement. In the event of termination, the Consultant shall be paid his compensation for services performed up until the date of termination subject to amounts withheld to satisfy any rightful claim or set-off by the Owner.

ARTICLE XIII

EXTENT OF AGREEMENT

THIS AGREEMENT represents the entire and integrated agreement between the Owner and the Consultant and supersedes all prior negotiations, representations or agreements, either written or oral. This Agreement may be amended only by written instrument signed by both Owner and Consultant.

APPROVED:

Robert W. Whitehead, P. E.
Acting Director
Division of Design and Construction

Geotechnology Inc.
Firm Name

M. [signature]
Signature of Owner

2258 GRISSOM DR.
Mailing Address

ST. LOUIS, MO. 63146
City, State, Zip

ATTEST:

Ed K[signature]
Signature of Corporate Secretary

CORPORATE SEAL:

Responsible Title Service

ST. PAUL TITLE INSURANCE CORPORATION

Noo-483082X
Noo-482768X
F-171786

CITY OFFICE
810 CHESTNUT ST.
ST. LOUIS, MO. 63101
621-0813

COUNTY OFFICE
10 SO. CENTRAL AVE.
CLAYTON, MO. 63105
727-8131

COPY OF CERTIFICATE OF TITLE

THE ST. PAUL TITLE INSURANCE CORPORATION has examined the title to the following described property situated in the City of St. Louis, State of Missouri, to-wit:

Lots 29, 30, 31, 32, 33 and part of Lots 27 and 28 in Block 2 of CHELTENHAM, Lots 21, 22, 23 and part of Lot 20 of WIBLE'S EASTERN ADDITION to CHELTENHAM, together with the Western 36 feet of former January Avenue vacated under the provisions of Ordinance No. 52058, and in Blocks 4022 and 4023 of the City of St. Louis, more particularly described as follows: Beginning at a point in the North line of Wilson Avenue, 40 feet wide, at its intersection with a line 36 feet East of and parallel to the West line of former January Avenue, 60 feet wide, as vacated under the provisions of Ordinance No. 52058; thence North 82 degrees 57 minutes 15 seconds West along said North line of Wilson Avenue a distance of 355.20 feet to a point; thence North 8 degrees 15 minutes 30 seconds East a distance of 472.56 feet to a point in the Southerly Right-of-Way line of Interstate Highway I-44; thence in an Easterly direction along said Right-of-Way line North 87 degrees 03 minutes 45 seconds East a distance of 25.59 feet to an angle point being located in the Eastern line of Lot 20 of Wible's Eastern Addition to Cheltenham, said point being 477 1 North along the Eastern line of said Wible's Addition from the Northern line of Wilson Avenue, 40 feet wide; thence South 87 degrees 53 minutes 03 seconds East and along said I-44 Right-of-Way line 295.71 feet to a point in the West line of said former January Avenue vacated as aforesaid at a point being 502.42 feet North along said line from the Northern line of Wilson Avenue; thence North 74 degrees 42 minutes 01 seconds East along the South Right-of-Way line of I-44 a distance of 39.27 feet to a point in a line 36 feet East of and parallel to said West line of former January Avenue, vacated as aforesaid; thence South 8 degrees 15 minutes 30 seconds West along said line 36 feet East of the West line of former January Avenue, vacated as aforesaid, a distance of 517.36 feet to the point of beginning.

According to the St. Louis City Records, the fee simple title to said property is vested in:

STATE DEPARTMENT OF EDUCATION, HERBERT WHEELER, COMMISSIONER,

Free and clear of liens, except as follows, to-wit:

DEEDS OF TRUST: NONE.

GENERAL TAXES for 1968, a lien.

SPECIAL TAXES: NONE reported on books in Comptroller's Office, that are a lien.

JUDGMENTS: NONE.

MECHANICS' LIENS: NONE.

RELINQUISHMENT of right of access to U. S. Highway No. I-44, according to instrument recorded December 30th, 1966 as Daily No. 31.

THIS certificate attempts to make no statement as to restrictions defined in any zoning ordinance or amendment thereto.

GENERAL WARRANTY DEED

This deed, made and entered into this 12th day of April, 1968 by and between

Raymond J. McManemin of the City of Richmond Heights, State of Missouri, and Lawrence J. Camie of the City of Ladue, State of Missouri, Carl C. Sciuto of the City of St. Louis, State of Missouri, Calogero Rallo of the City of St. Louis, State of Missouri, Salvatore Rallo of the City of St. Louis, State of Missouri, Nicholas Rallo of the City of St. Louis, State of Missouri, Peter J. Rallo of the City of St. Louis, State of Missouri, Joseph S. Rallo of the City of St. Louis, State of Missouri, and Charles Rallo, Jr. of the City of St. Louis, State of Missouri, doing business as Hampton Industrial Park and Edna Dorothy McManemin, wife of Raymond J.; Rita M. Camie, wife of Lawrence J.; Josephine M. Sciuto, wife of Carl C.; Mae Rallo, wife of Salvatore; Angela F. Rallo, wife of Nicholas; Katherine M. Rallo, wife of Peter J.; Florence T. Rallo, wife of Joseph S.; and Jean F. Rallo, wife of Charles Rallo, Jr., parties of the first part, and the State Department of Education, Herbert Wheeler, Commissioner, Jefferson City, Missouri, party of the second part.

WITNESSETH, that the said Party of the First Part for and in consideration of the sum of One Hundred ($100.00) Dollars and other good and valuable consideration paid by the said Parties of the Second Part, the receipt of which is hereby acknowledged, does by these presents bargain and sell, convey and confirm unto the said Parties of the Second Part the following described real estate situated in the City of St. Louis, and State of Missouri, to-wit:

Lots 29, 30, 31, 32, 33 and part of Lots 27 and 28 in Block 2 of CHELTENHAM, Lots 21, 22, 23 and part of Lot 20 of WIBLE'S EASTERN ADDITION to CHELTENHAM, together with the Western 36 feet of former January Avenue vacated under the provisions of Ordinance No. 52058, and in Blocks 4022 and 4023 of the City of St. Louis, more particularly described as follows: Beginning at a point in the North line of Wilson Avenue, 40 feet wide, at its intersection with a line 36 feet East of and parallel to the West line of former January Avenue, 60 feet wide, as vacated under the provisions of Ordinance No. 52058; thence North 82 degrees 57 minutes 15 seconds West along said North line of Wilson Avenue a distance of 355.20 feet to a point; thence North 8 degrees 15 minutes 30 seconds East a distance of 472.56 feet to a point in the Southerly Right-of-Way line of Interstate Highway I-44; thence in an Easterly direction along said Right-of-Way line North 87 degrees 03 minutes 45 seconds East a distance of 25.59 feet to an angle point being located in the Eastern line of Lot 20 of Wible's Eastern Addition to Cheltenham, said point being 477 feet North along the Eastern line of said Wible's Addition from the Northern line of Wilson Avenue, 40 feet wide; thence South 87 degrees 53 minutes 03 seconds East and along said I-44 Right-of-Way line 295.71 feet to a point in the West line of said former January Avenue vacated as aforesaid at a point being 502.42 feet North along said line from the Northern line of Wilson Avenue; thence North 74 degrees 42 minutes 01 seconds East along the South Right-of-Way line of I-44 a distance of 39.27 feet to a point in a line 36 feet East of and parallel to said West line of former January Avenue, vacated as aforesaid; thence South 8 degrees 15 minutes 30 seconds West along said line 36 feet East of the West line of former January Avenue, vacated as aforesaid, a distance of 517.36 feet to the point of beginning.

To have and to hold the same together with all rights and appurtenances to the same belonging unto the said Parties of the Second Part and to their successors and assigns forever. The said Party of the First Part hereby covenanting that it and its successors and assigns shall and will warrant and defend the title to the premises unto the said Parties of the Second Part and to their successors and assigns, except taxes following date of this Deed.

IN WITNESS WHEREOF, the said [illegible]y of the First Part has executed these presents the day and year first-above written.

FIRST PARTIES:

EDNA DOROTHY McMANEMIN	RAYMOND J. McMANEMIN
RITA M. CAMIE	LAWRENCE J. CAMIE
JOSEPHINE M. SCIUTO	CARL C. SCIUTO
	CALOGERO RALLO
MAE RALLO	SALVATORE RALLO
ANGELA F. RALLO	NICHOLAS RALLO
KATHERINE M. RALLO	PETER J. RALLO
FLORENCE T. RALLO	JOSEPH S. RALLO
JEAN F. RALLO	CHARLES RALLO, JR.

D/B/A HAMPTON INDUSTRIAL PARK

State of Missouri)
) ss.
City of St. Louis)

on this 12th day of April, 1968, before me personally appeared

Raymond J. McManemin and Edna Dorothy McManemin, his wife; Lawrence J. Camie and Rita M. Camie, his wife; Carl C. Sciuto and Josephine M. Sciuto, his wife; Calogero Rallo, single and unmarried; Salvatore Rallo and Mae Rallo, his wife; Nicholas Rallo and Angela F. Rallo, his wife; Peter J. Rallo and Katherine M. Rallo, his wife; Joseph S. Rallo and Florence T. Rallo, his wife; Charles Rallo, Jr. and Jean F. Rallo, his wife

to me known to be the persons described in and who executed the foregoing instrument and acknowledged that they executed the same as their free act and deed.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed my official seal in the city and state aforesaid the day and year first above written.

Notary Public

My term expires NOV. 14, 1971

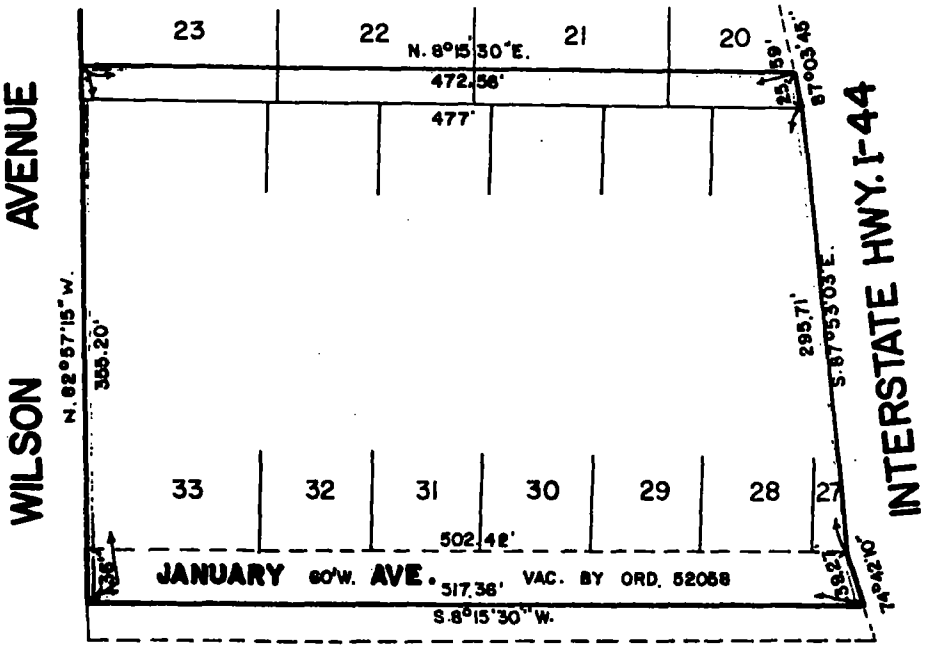
S[illegible]. PAU[illegible]T TLE NSURANCE CORPORAT ON

CITY OFFICE
810 CHESTNUT STREET
ST. LOUIS, MO. 63101
621-0813

COUNTY OFFICE
10 SOUTH CENTRAL AVE.
CLAYTON, MO. 63105
727-8131

CERTIFICATES OF TITLE AND TITLE INSURANCE

LOTS IN
CITY BLOCK'S 4022 & 4023



5 22-72876-0992

38,415 is all D&C shows available for construction, so Tec Technology's fees will add to this.

+$35,000

FORM 12

STATE OF MISSOURI — OFFICE OF ADMINISTRATION

CAPITAL IMPROVEMENT AND MAINTENANCE — IMMEDIATE PROGRAM BUDGET REQUEST ITEM

REGION	MAINTENANCE/REPAIR=M CONSTRUCTION=C	PAGE NUMBER
0	M	1

1 DEPARTMENT	2 DIV/AGENCY	3 SITE (LABS # AND NAME)	4 FACILITY (LABS # AND NAME)	C.O. RONALD LITTICH	6 DEPT.PRIORITY 14
DESE	SPED/SSSH	2413 ST. LOUIS, MO.	30013 HUBERT WHEELER	C.O. # 3147518296	SITE PRIORITY 1

7 DESCRIPTION OF WORK (SCOPE)

For work including, but not limited to, environmental accessment, collecting borings, excavation, remediation of tar waste, and restoration of the site.

Construction Cost	=	$40,000
Professional Cost	=	3,840
Administrative Cost	=	4,820
Total	=	$48,660

8 ESTIMATED COST

$48,660

9 JUSTIFICATION

There is tar coming up through the asphalt playground and grassy areas on the back portion of the track of land. According to land acquisition records this site use to be a construction debris landfill. A backhoe was used to excavate an area next to the asphalt playground. At a depth of 4' below the surface we hit a 8' wide x 9" thick flowing vein of coal tar. This material was tested and found to be a special waste due to 0.3 PPM lead leaking in water. This tar substance ruins the children's shoes and clothes when they play. In addition, this material could cause exposure problems with lead if a child had significant exposure to the substance.

10 BUD. CAT.	11 REL.PRIOR	12 FAC. C FY 93	13 REL. FUTURE	14 GOV. RECOMM.	15. APPROP
CONSTRUCTION					
LAND ACQUI.					
EQUIPMENT					
TELECOMM.					
FURNISHINGS					
MAINT/REPAIR		$40,000			
PROF. COST ADMN. COST		$3,840 $4,820			
TOTAL COST		$48,660			

RECENT MAJOR EXPENDITURES

YEAR	DESCRIPTION (SCOPE)	COST
1986	Replace Carpet	50,770
	Replace Light Fixtures	9,420
	Site Alterations	10,900
	Replace Roof	161,485

REQUEST BY FUND SOURCE (IDENTIFY FUND SOURCE)		OPERATIONS BUDGET IMPACT FY EXPENDITURE PLAN	
GENERAL REV.		ITEM	
		PERSONAL SERVICE EQUIPMENT PURCH. OPERATIONS	
TOTAL		TOTAL	

CONDITIONS AND STIPULATIONS OF TITLE INSURANCE

1. Definition of Terms

The following terms when used in this policy mean:

(a) "land": the land described, specifically or by reference, in Schedule A and improvements affixed thereto which by law constitute real property;

(b) "public records": those records which impart constructive notice of matters relating to said land;

(c) "knowledge": actual knowledge, not constructive knowledge or notice which may be imputed to the Insured by reason of any public records; and

(d) "date": the effective date.

2. Exclusions from the Coverage of this Policy

This policy does not insure against loss or damage by reason of the following:

(a) Any law, ordinance or governmental regulation (including but not limited to building and zoning ordinances) restricting or regulating or prohibiting the occupancy, use or enjoyment of the land, or regulating the character, dimensions, or location of any improvement now or hereafter erected on said land, or prohibiting a separation in ownership or a reduction in the dimensions or area of any lot or parcel of land.

(b) Governmental rights of police power or eminent domain unless notice of the exercise of such rights appears in the public records at the date hereof.

(c) Title to any property beyond the lines of the land expressly described or referred to in Schedule A, or title to areas within or rights or easements in any abutting streets, roads, avenues, lanes, ways or waterways (except to the extent the right of access to and from said land is covered by the insuring provisions of this policy), or the right to maintain therein vaults, tunnels, ramps or any other structure or improvement, unless this policy specifically provides that such titles, rights or easements are insured.

(d) Defects, liens, encumbrances, adverse claims against the title as insured or other matters (1) created, suffered, assumed or agreed to by the Insured; or (2) known to the Insured either at the date of this policy or at the date such Insured acquired an estate or interest insured by this policy and not shown by the public records, unless disclosure thereof in writing by the Insured shall have been made to the Company prior to the date of this policy; or (3) resulting in no loss to the Insured; or (4) attaching or created subsequent to the date hereof.

(e) Loss or damage which would not have been sustained if the Insured were a purchaser for value without knowledge.

3. Defense and Prosecution of Actions — Notice of Claim to be Given by the Insured

(a) The Company, at its own cost and without undue delay, shall provide for the defense of the Insured in all litigation consisting of actions or proceedings commenced against the Insured, or defenses interposed against a sale of the estate in said land which litigation in any of such events is founded upon an alleged defect, lien or encumbrance insured against by this policy, and may pursue such litigation to final determination in the court of last resort.

(b) In case any such action or proceeding shall be begun, or defense interposed, or in case knowledge shall come to the Insured of any claim of title or interest which is adverse to the title as insured, or which might cause loss or damage for which the Company shall or may be liable by virtue of this policy or in the event the title is rejected as unmarketable by one who has leased or has contracted to purchase, lease or lend money on the land described in Schedule A hereof, the Insured shall notify the Company thereof in writing. If such notice shall not be given to the Company within ten days of the receipt of process or pleadings or if the Insured shall not in writing, promptly notify the Company of any defect, lien or encumbrance insured against which shall come to the knowledge of the Insured, or if the Insured shall not, in writing, promptly notify the Company of any such rejection by reason of claimed unmarketability of the title, then all liability of the Company in regard to the subject matter of such action, proceeding or matter shall cease and terminate; provided, however, that failure to notify shall in no case prejudice the claim of any Insured unless the Company shall be actually prejudiced by such failure and then only to the extent of such prejudice.

(c) The Company shall have the right at its own cost to institute and prosecute any action or proceeding or do any other act which in its opinion may be necessary or desirable to establish the title as insured; and the Company may take any appropriate action under the terms of this policy whether or not it shall be liable thereunder and shall not thereby concede liability or waive any provision of this policy.

(d) In all cases where this policy permits or requires the Company to prosecute or provide for the defense of any action or proceeding, the Insured shall secure to it the right to so prosecute or provide defense in such action or proceeding, and all appeals therein, and permit it to use, at its option, the name of the Insured for such purpose. Whenever requested by the Company the Insured shall give the Company all reasonable aid in any such action or proceeding, in effecting settlement, securing evidence, obtaining witnesses, or prosecuting or defending such action or proceeding, and the Company shall reimburse the Insured for any expense so incurred.

4. Notice of Loss — Limitation of Action

In addition to the notices required under paragraph 3(b), a statement in writing of any loss or damage for which it is claimed the Company is liable under this policy shall be furnished to the Company within sixty days after such loss or damage shall have been determined and no right of action shall accrue to the Insured under this policy until thirty days after such statement shall have been furnished, and no recovery shall be had by the Insured under this policy unless action shall be commenced thereon within five years after expiration of said thirty day period. Failure to furnish such statement of loss or damage, or to commence such action within the time hereinbefore specified, shall be a conclusive bar against maintenance by the Insured of any action under this policy.

5. Option to Pay, Settle or Compromise Claims

The Company shall have the option to pay or settle or compromise for or in the name of the Insured any claim insured against or to pay the full amount of this policy and such payment or tender of payment, together with all costs, attorney's fees and expenses which the Company is obligated hereunder to pay, shall terminate all liability of the Company hereunder.

6. Payment of Loss

(a) The liability of the Company under this policy shall in no case exceed, in all, the actual loss of the Insured and costs and attorneys' fees which the Company may be obligated hereunder to pay.

(b) The Company will pay, in addition to any loss insured against by this policy, all costs imposed upon the Insured in litigation carried on by the Company for the Insured, and all costs and attorneys' fees in litigation carried on by the Insured with the written authorization of the Company.

(c) No claim for damages shall arise or be maintainable under this policy (1) if the Company, after having received notice of an alleged defect, lien or encumbrance not excepted or excluded herein removes such defect, lien or encumbrance within a reasonable time after receipt of such notice; or (2) for liability voluntarily assumed by the Insured in settling any claim or suit without written consent of the Company; or (3) in the event the title is rejected as unmarketable because of a defect, lien or encumbrance not excepted or excluded in this policy, until there has been a final determination by a court of competent jurisdiction sustaining such rejection.

(d) All payments under this policy, except payments made for costs, attorneys' fees and expenses, shall reduce the amount of the insurance pro tanto and no payment shall be made without producing this policy for endorsement of such payment unless the policy be lost or destroyed, in which case proof of such loss or destruction shall be furnished to the satisfaction of the Company.

(e) When liability has been definitely fixed in accordance with the conditions of this policy the loss or damage shall be payable within thirty days thereafter.

7. Liability Noncumulative

It is expressly understood that the amount of this policy is reduced by any amount the Company may pay under any policy insuring the validity or priority of any mortgage or deed of trust shown or referred to in Schedule B hereof or

CONDITIONS AND STIPULATIONS (Continued on Reverse Side)

JUDGMENTS: NONE.

SALE CONTRACT

St. Louis, _____, Mo., December 29, 19 67

RECEIVED FROM State Department of Education (Missouri)

_____, hereinafter called purchaser, the sum of Ten Thousand and no/100---------- Dollars ($ 10,000.00) as earnest deposit and as part of the cash consideration for the purchase of the following described property situated in the City of St. Louis, Missouri, known or described as:

A parcel of ground of exactly four (4) acres being the easternmost four acres of the parcel, whown on the attached plat, presently offered by sale by G. J. Nooney & Co. The west line of the four (4) acre parcel shall be perpendicular to the south line of the larger parcel. Exact description to be determined by survey to be obtained by Seller.

together with (if any) the improvements thereon and appurtenances, fixtures and equipment thereto belonging (which seller guarantees to own free and clear of encumbrances), including all lighting, heating, cooling and plumbing equipment and fixtures, attached linoleum, radiator shields, shades, curtain and drapery fixtures, Venetian blinds, shutters, storm sash and doors, screens, awnings, ventilating and exhaust fans, water heaters, stokers, oil and gas burners, garbage disposal and dishwasher, trees and shrubs, and all articles now provided for tenant use:

_____

_____

which property is this day agreed to be sold to purchaser subject to approval of seller by noon of _____, 19___, and not otherwise (and if not so approved earnest deposit shall be returned to purchaser) for the total sale price of Two Hundred Twenty-six Thousand Five Hundred Twelve and 100/100 Dollars ($226,512.00) on the following terms:

Earnest deposit made as per this receipt ..... $ 10,000.00

Additional earnest deposit to be made by purchaser on _____, 19___ ..... $ 0

Cash to be paid on closing date of sale as hereinafter fixed (subject to adjustments as herein provided) ..... $ 216,512.00

Deed or deeds of trust of record, subject to which title shall be transferred ... $ 0
description

Deed or deeds of trust to be accepted by seller as part purchase money ..... $ 0
(Insert terms including type of loan, interest rate, method of payment, term of years, prepayment privilege, if any, commission, if any, and any special provisions.)

The Seller hereby agrees to provide a title insurance commitment issued by an acceptable and qualified Land Title Insurance Company, to the Purchaser, not less than thirty (30) consecutive calendar days prior to the date set for the closing of this transaction.

Final closing of this transaction will be contingent upon test drilling by the purchaser showing satisfactory conditions for construction of proposed project.

I SEE NOTHING IN THE FILE THAT THIS HAS BEEN DONE, BUT SINCE IN WAS OUR RESPONSIBILITY, I DOUBT IF THIS IS RECEIVED

The sale under this contract shall be closed under the Sale Conditions and Closing Practices of the Real Estate Board of Metropolitan St. Louis, and subject to any Special Agreements between Seller and Purchaser, all set forth on the reverse side hereof and hereby made a part of this contract, as fully and effectually as if they were incorporated herein, at the office of Title Insurance Corporation, 810 Chestnut St., St. Louis on March 1, 1968 or on such prior date as the parties hereto may agree.

All adjustments referred to on the reverse side hereof to be made as of _____.
Title to pass when sale is closed. Time is of the essence of this contract.
Possession of property to be delivered to purchaser at time of transfer of title, ~~or on~~ _____

Deed to _____

_____

Approved on date first above written:

Clarence M. Turley, Inc. Realtor

is authorized to order title examined.

State Department of Education
Purchaser

By Hubert Wheeley, Commissioner

Address Jefferson City, Missouri Phone 635-8125

Witness _____

_____ Realtor
Agent

By _____

Approved _____, 19___

I/we agree to pay G. J. Nooney & Co., and Clarence M. Turley, Inc.

the Commission as provided under the Schedule of the Real Estate Board of Metropolitan St. Louis, to be a lien on said property.

_____
Seller

_____
Seller

Address _____ Phone _____

Witness _____

ENVIRONMETRICS

2345 Millpark Drive
Maryland Heights, MO 63043
(314) 427-0550

DEPARTMENT ELEMENTARY &
SECONDARY EDUCATION
P.O. BOX 480
JEFFERSON CITY, MO 63138

ATTN: RON LITTICH

INVOICE # ---
PO # ---

POLYNUCLEAR AROMATIC HYDROCARBONS
SW-846 METHOD 8270

SAMPLE ID: SAMPLE RECEIVED 10/9/90
LAB ID: 9010610

CAS NUMBER		DETECTION LIMIT	RESULTS
91-20-3	Naphthalene	20,000,000 µg/kg	ND µg/kg
91-57-6	2-Methylnaphthalene	20,000,000	ND
91-58-7	2-Chloronaphthalene	20,000,000	ND
208-96-8	Acenaphthylene	20,000,000	ND
83-32-9	Acenaphthene	20,000,000	ND
86-73-7	Fluorene	20,000,000	ND
85-01-8	Phenanthrene	20,000,000	ND
120-12-7	Anthracene	20,000,000	ND
206-44-0	Fluoranthene	20,000,000	ND
129-00-0	Pyrene	20,000,000	ND
218-01-9	Chrysene	20,000,000	ND
56-55-3	Benzo(α)anthracene	20,000,000	ND
205-99-2	Benzo(β)fluoranthene	20,000,000	ND
207-08-9	Benzo(k)fluoranthene	20,000,000	ND
50-32-8	Benzo(α)pyrene	20,000,000	ND
193-39-5	Indeno(1,2,3-cd)pyrene	20,000,000	ND
53-70-3	Dibenzo(a,h)anthracene	20,000,000	ND
191-24-2	Benzo(g,h,i)perylene	20,000,000	ND

ND = BELOW DETECTION LIMIT

OCTOBER 15, 1990

WAYNE L. COOPER
LABORATORY DIRECTOR

ENVIRONMETRICS

2345 Millpark Drive
Maryland Heights, MO 63043
(314) 427-0550

DEPARTMENT ELEMENTARY &
SECONDARY EDUCATION
P.O. BOX 480
JEFFERSON CITY, MO 63138

ATTN: RON LITTICH

INVOICE # 10920
PO # ---

ANALYSIS RESULTS

SAMPLE ID: SAMPLE RECEIVED 10/9/90
LAB ID: 9010610

TEST PERFORMED	METHOD OF ANALYSIS	RESULTS
RCRA METALS ANALYSIS	X-RAY	TOTAL
ARSENIC		<5 mg/kg
BARIUM		<5
CADMIUM		<5
CHROMIUM		<5
LEAD		859
SELENIUM		<5
SILVER		<5
MERCURY	EPA 245.1	<0.1 mg/kg
IGNITABILITY (SETAFLASH)	SW-846 1020	>200 (F)
CORROSIVITY (10%)	SW-846 9040	8.6 *

*SAMPLE WAS DISSOLVED BEFORE pH MEASUREMENT.

ENVIRONMETRICS
2345 Millpark Drive
Maryland Heights, MO 63043
(314) 427-0550

DEPARTMENT OF ELEMENTARY & SECONDARY EDUCATION
P.O. BOX 480
JEFFERSON, CITY, MO 63138

ATTN: RON LITTICH

INVOICE # 11080
PO # ---

ANALYSIS RESULTS

SAMPLE ID: TAR SAMPLE
LAB ID: 9012129

TEST PERFORMED	METHOD OF ANALYSIS	RESULTS
TCLP EXTRACTION	SW-846 1311	
RCRA METALS ANALYSIS	SW-846 6010	EXTRACTION
LEAD		0.3 ppm

DECEMBER 7, 1990

WAYNE L. COOPER
LABORATORY DIRECTOR

ENVIRO METRICS
2345 Millpark Drive
Maryland Heights, MO 63043
(314) 427-0550

October 11, 1990

Mr. Ron Littich
Dept. of Elem. & Sec. Education
P.O. Box 480
Jefferson City, Mo. 65102

Dear Mr. Littich:

Environmetrics, Inc. is pleased to submit a second quotation based on our phone conversation on October 10, 1990.

Total Metals (8)	$ 155.00 ✓
PH	10.00 ✓
Ignitability	25.00 ✓
Semivolatiles	425.00
Library Search	50.00
	665.-

The sample we received is almost pure tar looking material, therefore, we have to dissolve it in a solvent before analyses. Our detection limits for metals and semivolatiles will be higher than a typical soil sample.

If you have any questions, please call me.

Sincerely,

Shaaban Ben-Poorat
V.P. Business Development

665.—
+ 150.—
$815.—

NOTE: BASED UPON RESULTS OF TOTAL METALS TEST ABOVE, IT WAS FOUND THAT THE SAMPLE CONTAINED ABOVE NORMAL QUANTITIES OF LEAD. TO DETERMINE HOW MUCH LEAD WAS LEACHING FROM THIS TAR SUBSTANCE INTO THE GROUND WATER, A PRICE $125 WAS PHONE QUOTED FOR TCLP EXTRACTION TEST SPECIMEN PREPARATION PLUS $25. FOR DETAILED ANALYSIS FOR PPM LEAD LEACHING INTO H_2 THIS PHONE QUOTE WAS ACCEPTED, PLEASE SEE COMPETIVE QUOTES FOR APPLES TO APPLES COST COMPARISON. FOR THE EXACT SAME TESTS.

ROBERT E. BARTMAN
Commissioner of Education

DEPARTMENT OF ELEMENTARY AND SECONDARY EDUCATION
P.O. BOX 480
JEFFERSON CITY, MISSOURI 65102-0480

May 23, 1991

Mr. Walter Johannpeter, Region I Coordinator
Division of Design and Construction
Truman Building, Room 730
Jefferson City, Missouri 65102

Subject: Analysis of Tar Boiling to Surface of Playground For Hazardous Waste/Special Waste Characteristics
Hubert Wheeler State School

Dear Walter:

In early October of 1990, I met in your office with you and discussed a problem DESE maintenance encountered while doing a summer playground repair project at the subject school. Ever since this school was constructed, a tar like substance occasionally boils and ponds on the soil surface of the school play area. This poses a problem because students step in this gooey stuff and ruins their shoes and clothes plus, they track it into the school and damage the interior flooring materials. In early October, the DESE maintenance staff rented a backhoe and dumpster for the purpose of removing this material from the soil surface plus determine to what depth and extent this tar-like substance is present. What we found was 8' wide x 1/2' thick solid horizontal vein of this tar-like substance moving parallel to the soil surface at a depth of approximately 4 feet. Based upon safety concerns, I discussed with you the urgent need for getting this substance analyzed to determine if it is a hazardous or special waste. You verbally agreed and authorized my proceeding with getting bids and have the substance analyzed.

Based upon three (3) quotes, Environmetics was the lowest bidder. Attached are the original invoices for their analysis work which totals $590. Please note that the invoice is less than their bid, when questioned by phone on this they indicated they had misquoted on the bid. I apologize for the lateness in forwarding these invoices, but my original file which contained all my quotes and notes was accidentally thrown away by our clerical staff during a file clean-out day. These duplicate quotes were just recently obtained. Please charge the cost for this work against DESE's Unprogrammed Emergency General Revenue Account.

Results of this analysis indicate that this tar-like substance is not a hazardous waste, but is rather a "special waste" and is subject to DNR and St. Louis City Controls for future removal and disposal.

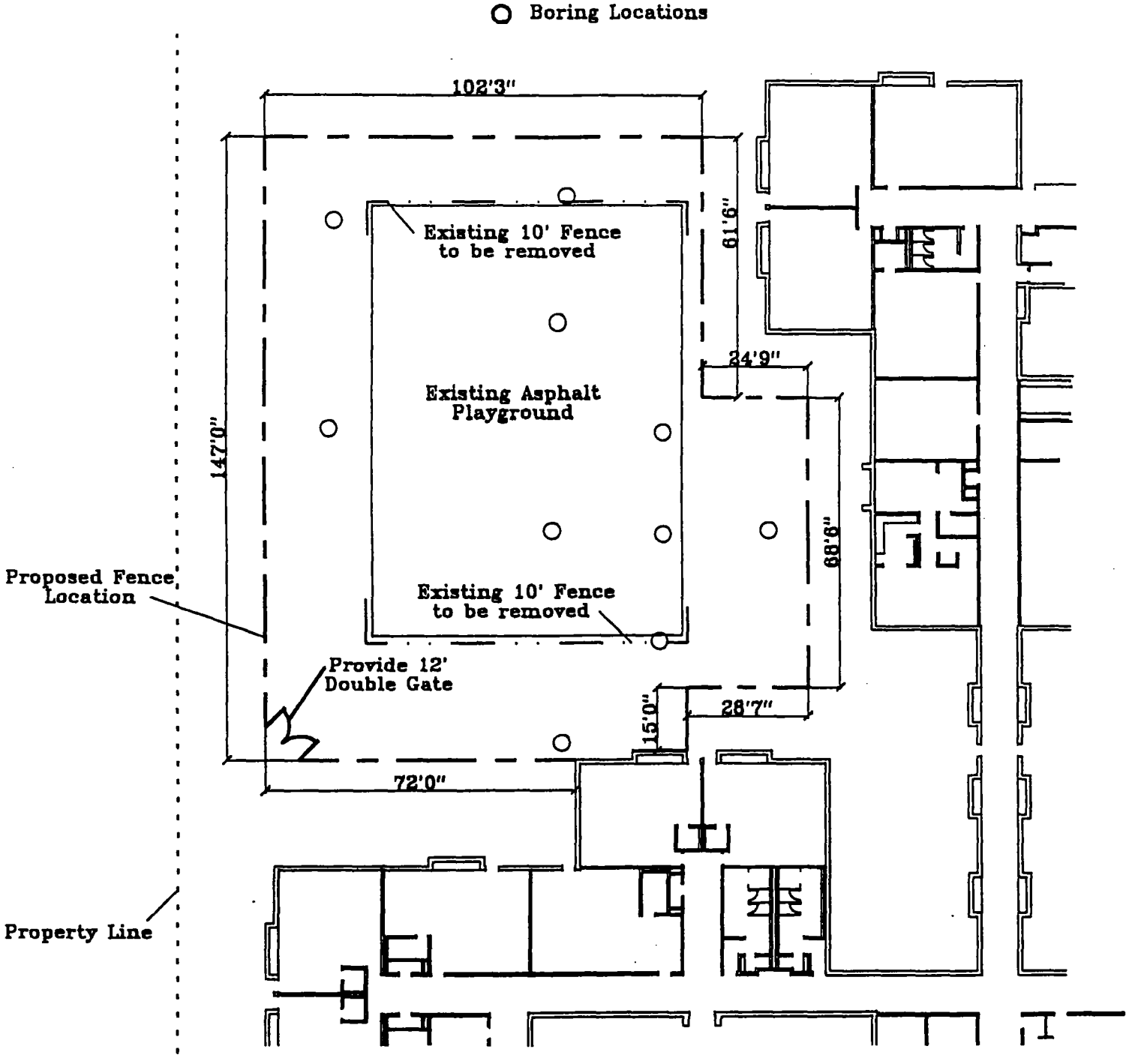
If you have any questions, please contact me at 751-8296.

Sincerely,

Ron RW

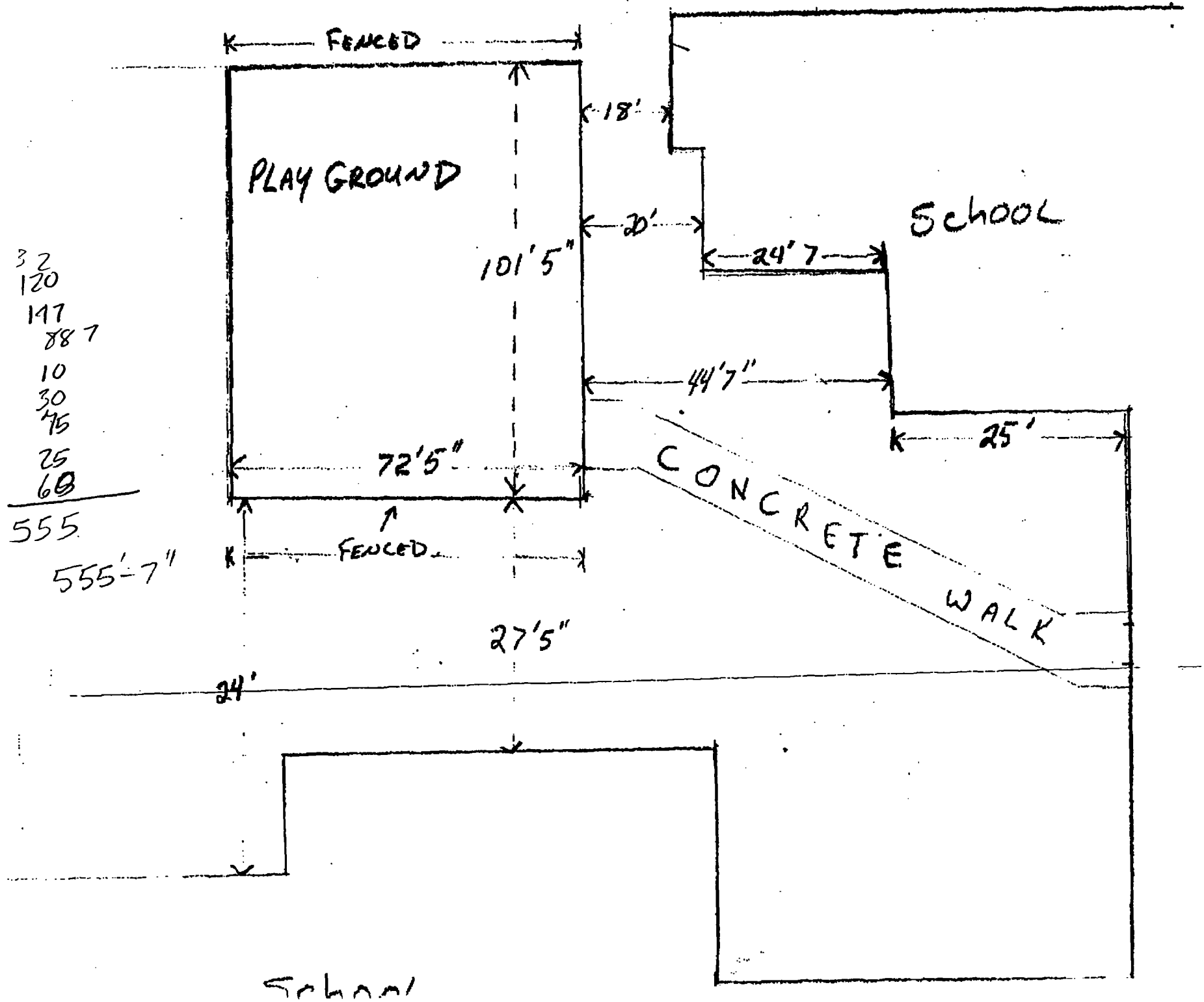
Ronald L. Littich
Director of Facilities
State Schools for Severely Handicapped

rn
c: Dewayne Cossey
Environmetrics - Stacey
Project File
Correspondence File



Fence Installation
Hubert Wheeler State School

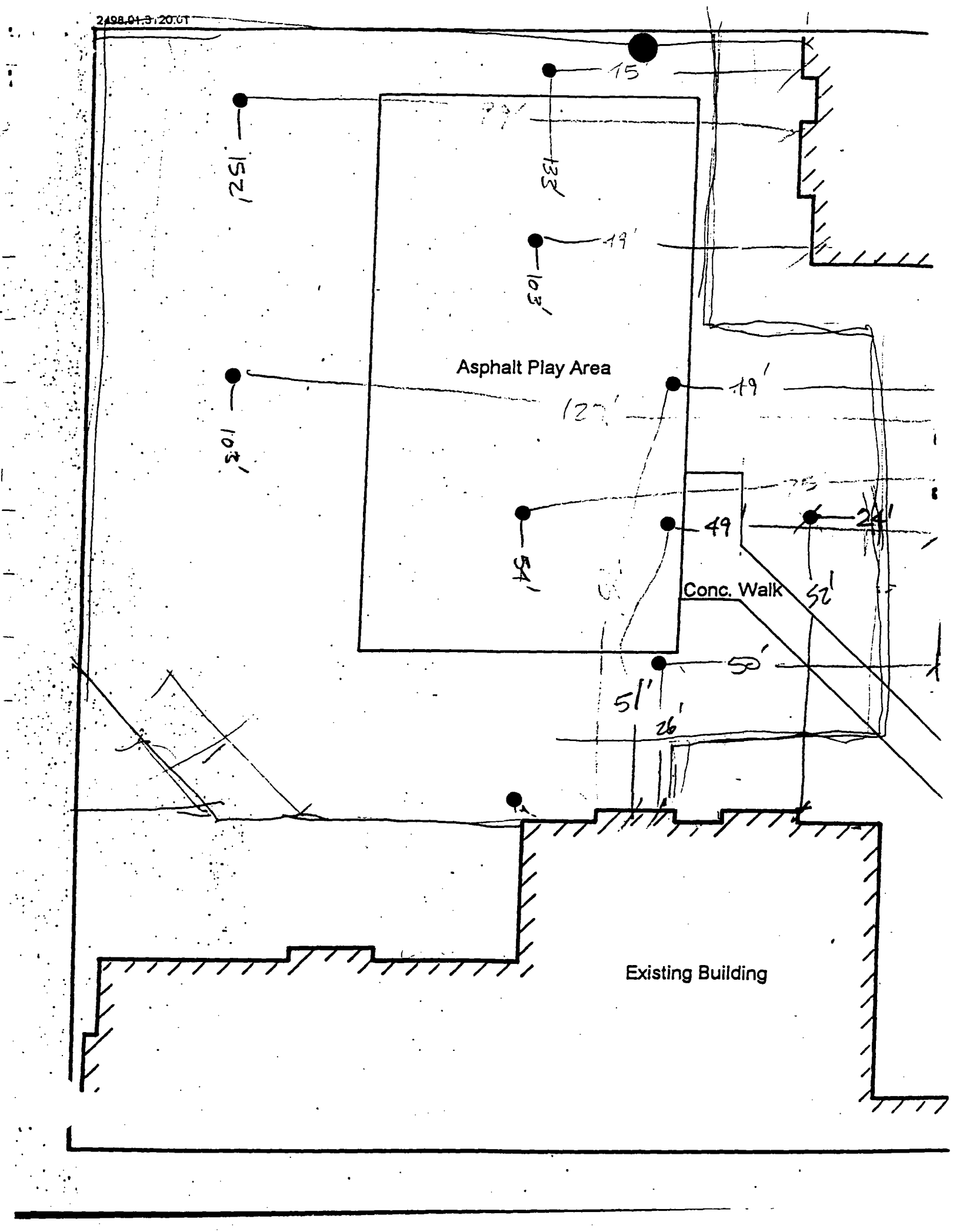
NOT TO SCALE

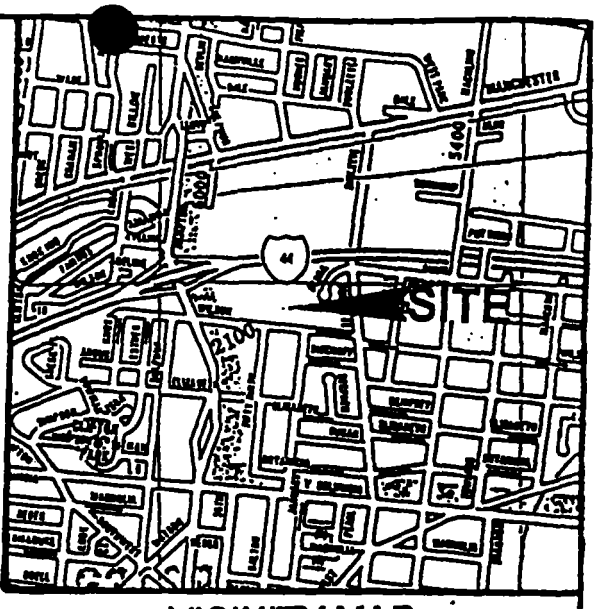


32
120
147
887
10
30
75
25
60
555

555'-7"

TOTAL P.02


2498.01.3, 20.0T
15'
125'
132'
19'
103'
Asphalt Play Area
103'
19'
127'
49
24'
54'
Conc. Walk
52'
50'
51'
26'
Existing Building



VICINITY MAP

Existing Building

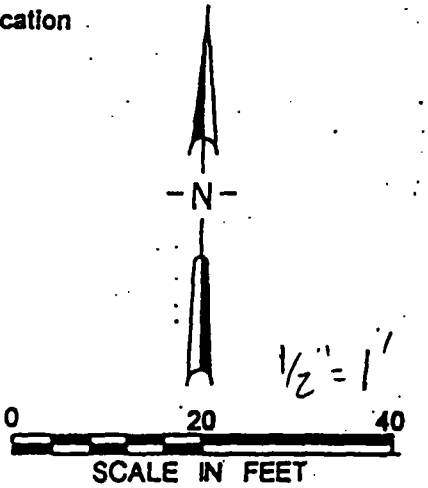
Conc. Walk

NOTES

1. Plan adapted from a drawing dated September 6, 1978 titled "Site Plan", prepared and supplied by State of Missouri Office of AdMinistration Division of Design and Construction.

LEGEND

● Proposed Boring Location



SCALE IN FEET

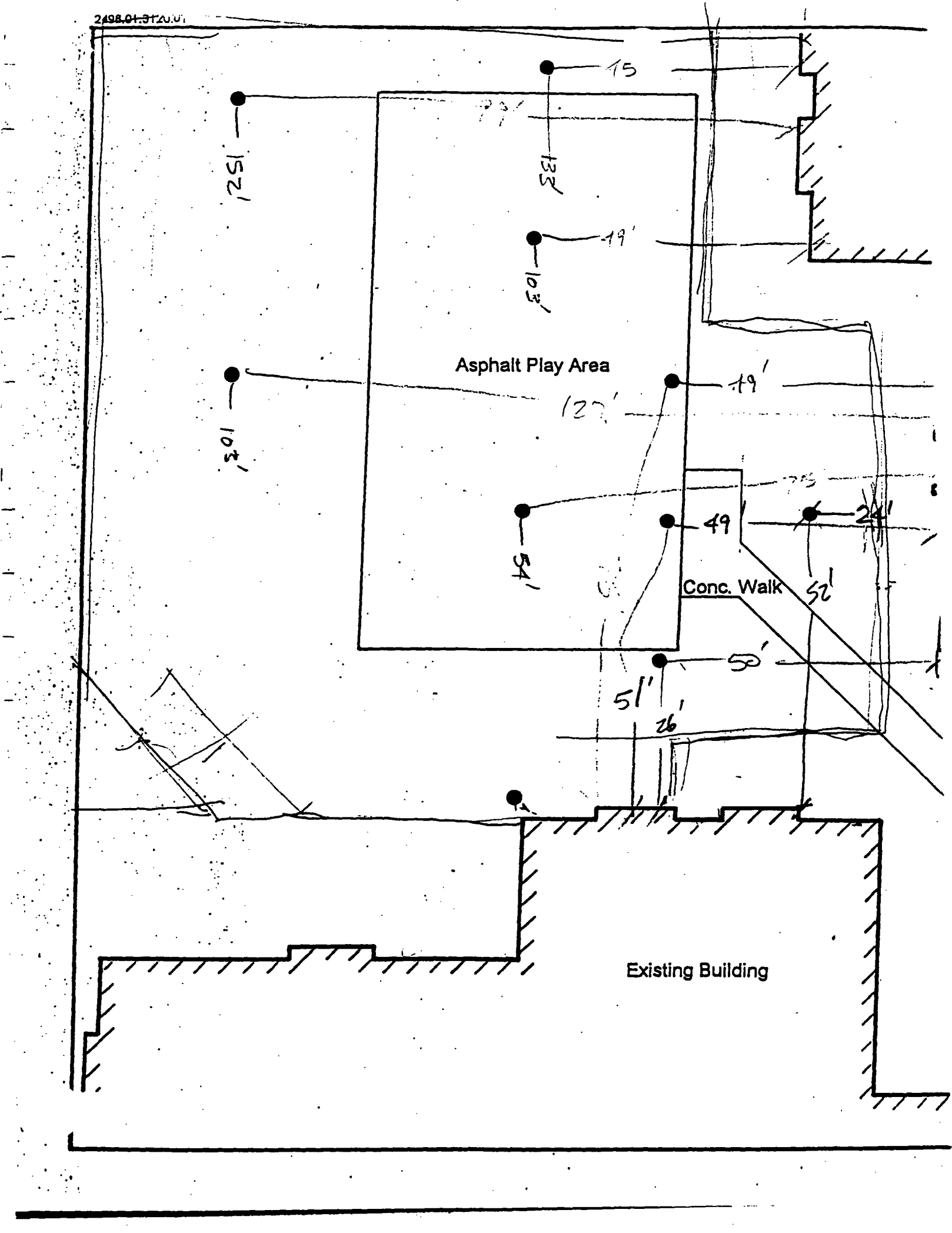
GEOTECHNOLOGY INC
ENGINEERING AND ENVIRONMENTAL SERVICES
SAINT LOUIS • KANSAS CITY

Hubert Wheeler School - Restoration
St. Louis, Missouri

PLAN OF SITE AND PROPOSED BORING LOCATIONS

Drawn by: MAH	Ck'd. by: EJA	App'vd. by: EJA
Date 7-26-93	Date 11/30/93	Date 11/24/93

PLATE 1


15
125'
133'
19'
103'
Asphalt Play Area
19'
127'
101'
49
24'
54'
Conc. Walk
52'
50'
51'
26'
Existing Building

ROBERT E. BARTMAN
Commissioner of Education

DEPARTMENT OF ELEMENTARY AND SECONDARY EDUCATION
P.O. BOX 480
JEFFERSON CITY, MISSOURI 65102-0480

January 6, 1994

Roy Ferguson
Cutter Fence & Door, Inc.
748 N. Hwy 67, Suite 108
Florissant, MO 63031-5108

Subject: Fence Installation
Hubert Wheeler State School
Project No. **05-523-93-0001**

Dear Mr. Ferguson:

The fence to be installed as part of the above project is to surround a playground area where a black tar-like material, has occasionally oozed from the ground. This area is being studied for possible hazards and to determine remediation methods for this substance. For your review, I've attached a copy of a subsurface assessment which was performed on this area. Should any suspect material be encountered during this fence installation, decontamination procedures include thoroughly washing all equipment with a steam cleaner and work gear with soap and water. Please place all excess tailings from boring for posts inside the fenced area.

If you have any questions, please feel free to call me at (314)751-8223. Thank you for your cooperation in this matter.

Sincerely,

Jim Heckemeyer

Jim Heckemeyer
Supervisor for Facilities Projects

JH
Enclosures
c: Dewayne Cossey
Ron Littich
Correspondence File
Project File

STATE OF MISSOURI
DEPARTMENT OF ELEMENT/ ND SECONDARY EDUCATION
P.O. BOX 480, JEFFERSON CI. ISSOURI 65102

DEPARTMENTAL PURCHASE REQUISITION

60017

PAGE (S) 1 OF 1

DIVISION	DIV. CODE	SECTION OR PROGRAM	SEC. NO.	ACCOUNT NAME	ACCOUNT NO.
Special Education	70	Handicapped Children	760		

ITEM NO.	QUANTITY	UNIT	CATALOG NUMBER	PAGE NO.	DETAILED DESCRIPTION OF ITEM OR ITEMS (INDICATE BRAND NAME, MANUFACTURER, SIZE, ETC., IF KNOWN)	UNIT PRICE	TOTAL COST
					USE A SEPARATE FORM FOR EACH VENDOR		
1	1				Provide and Install Chain Link Fencing Around Playground Area and Related Items Per 12/23/93 Transmittal		$4,998.00
					Project No. 05-523-93-0001 Account No. 523-72876-2730		
					*Proposal, Wage Rate and Bid Record Attached		

DELIVERY ADDRESS — SHIP OR DELIVER ABOVE TO THE FOLLOWING ADDRESS:

Hubert Wheeler State School
5707 Wilson Avenue
St. Louis, MO 63110

SOURCE OF SUPPLY, IF KNOWN: VENDOR CODE _____

Cutter Fence & Door
748 N. Highway 67, Suite 108
Florissant, MO 63031-5108

SIGNATURE OF REQUESTOR	TITLE	PHONE NO.	DATE
Jim McClenney	Supv., Facilities Projects	1-8223	1/3/94

AUTHORIZED BY: (SIGNATURE)	TITLE	DATE
	Director of Facilities	1/6/94

SPACE BELOW FOR USE BY CONTRACTING AND PROCUREMENT SECTION

ED. ORDER (UNDER $100)	LOCAL ORDER ($100-$2,000)	ENCB. REQUEST	CONTRACT RELEASE	P.O. REQUISITION (BID)	CONFIRMING ORDER	PAYMENT INVOICE ATTACHED	PRORATED COST #

ITEM NO.	QUANTITY OR %	SECTION[3]	SUBSECTION[4]	APPROPRIATION[4]	PROGRAM[5]	GRANT[6]	PROJECT[7]	OBJECT CODE[8]	DETAIL OBJECT[9]	AMOUNT

MO 500-0217 (4-88)

DATE PROCESSED	DOCUMENT NO.

DISTRIBUTION: WHITE/ACCOUNTING & PROCUREMENT CANARY/ASSISTANT COMMISSIONER/SUPERINTENDENT PINK/FILE COPY

SALE CONTRA

St. Louis, Mo., December 29, 1967

RECEIVED FROM State Department of Education (Missouri)

_____, hereinafter called purchaser, the sum of Ten Thousand and no/100---------- Dollars ($10,000.00) as earnest deposit and as part of the cash consideration for the purchase of the following described property situated in the City of St. Louis, Missouri, known or described as:

A parcel of ground of exactly four (4) acres being the easternmost four acres of the parcel, whown on the attached plat, presently offered by sale by G. J. Nooney & Co. The west line of the four (4) acre parcel shall be perpendicular to the south line of the larger parcel. Exact description to be determined by survey to be obtained by Seller.

together with (if any) the improvements thereon and appurtenances, fixtures and equipment thereto belonging (which seller guarantees to own free and clear of encumbrances), including all lighting, heating, cooling and plumbing equipment and fixtures, attached linoleum, radiator shields, shades, curtain and drapery fixtures, Venetian blinds, shutters, storm sash and doors, screens, awnings, ventilating and exhaust fans, water heaters, stokers, oil and gas burners, garbage disposal and dishwasher, trees and shrubs, and all articles now provided for tenant use:

which property is this day agreed to be sold to purchaser subject to approval of seller by noon of _____, 19__, and not otherwise (and if not so approved earnest deposit shall be returned to purchaser) for the total sale price of Two Hundred Twenty-six Thousand Five Hundred Twelve and no/100 Dollars ($226,512.00) on the following terms:

Earnest deposit made as per this receipt ..... $ 10,000.00

Additional earnest deposit to be made by purchaser on _____, 19__ ..... $ 0

Cash to be paid on closing date of sale as hereinafter fixed (subject to adjustments as herein provided) ..... $ 216,512.00

Deed or deeds of trust of record, subject to which title shall be transferred ... $ 0
description

Deed or deeds of trust to be accepted by seller as part purchase money ..... $ 0
(Insert terms including type of loan, interest rate, method of payment, term of years, prepayment privilege, if any, commission, if any, and any special provisions.)

The Seller hereby agrees to provide a title insurance commitment issued by an acceptable and qualified Land Title Insurance Company, to the Purchaser, not less than thirty (30) consecutive calendar days prior to the date set for the closing of this transaction.

Final closing of this transaction will be contingent upon test drilling by the purchaser showing satisfactory conditions for construction of proposed project.

The sale under this contract shall be closed under the Sale Conditions and Closing Practices of the Real Estate Board of Metropolitan St. Louis, and subject to any Special Agreements between Seller and Purchaser, all set forth on the reverse side hereof and hereby made a part of this contract, as fully and effectually as if they were incorporated herein, at the office of Title Insurance Corporation, 810 Chestnut St., St. Louis on March 1, 1968 or on such prior date as the parties hereto may agree.

All adjustments referred to on the reverse side hereof to be made as of _____.
Title to pass when sale is closed. Time is of the essence of this contract.
Possession of property to be delivered to purchaser at time of transfer of title, ~~date~~ _____

Deed to _____

_____

Approved on date first above written:

Clarence M. Turley, Inc. Realtor

is authorized to order title examined.

State Department of Education
Purchaser

By Hubert A. Wheeler, Commissioner

Address Jefferson City, Missouri Phone 635-8125

Witness _____

_____ Realtor
Agent

By _____

Approved _____, 19__

I/we agree to pay G. J. Nooney & Co., and Clarence M. Turley, Inc.

the Commission as provided under the Schedule of the Real Estate Board of Metropolitan St. Louis, to be a lien on said property.

_____
Seller

_____
Seller

Address _____ Phone _____

Witness _____

SALE CONDITIONS AND CLOSING PRACTICES OF THE REAL ESTATE BOARD OF METROPOLITAN ST. LOUIS

At election of either seller or purchaser, and at such party's expense, sale may be closed in escrow department of the local office of any reputable title company, but terms of contract shall not be affected.

Earnest deposit to be retained by seller's agent, without interest, but agent shall not be liable for earnest deposit until actually in form of cash in hands of agent; if sale is closed, earnest deposit to apply on sale commission; if purchaser shall fail to pay additional earnest deposit when due (if required by contract) or if sale be not closed by date fixed therefor owing to failure of performance by purchaser, earnest deposit shall be forfeited by purchaser, but purchaser shall nevertheless be bound to fulfillment of contract if so determined by seller, but this shall not entitle purchaser to enforce sale. Forfeited earnest deposit shall go first toward reimbursing expenses of agent incurred in this transaction, and balance to go one-half to seller and one-half to agent in full of commission.

Rents, general taxes based on latest available assessment and rate, subdivision upkeep assessments, interest, insurance premiums, water rates, sewer service charge, gas and electric bills, fuel supply and operating expenses (if any) to be prorated and adjusted as provided on the basis of 30 days to the month, seller to have last day; general tax year to run from January 1st; delinquent rents, over thirty days, if any, to be collected by seller and not adjusted. Purchaser to pay all recording fees.

Seller shall furnish general warranty deed, subject to deed restrictions, easements, rights-of-way of record, and zoning regulations; also subject to leases and to occupancy of tenants existing on the date contract is executed by purchaser; general taxes payable in current year and thereafter, and special taxes assessed or becoming a lien after date contract is executed by purchaser; said general and special taxes to be assumed and paid by purchaser. All personal property and fixtures included in this sale is guaranteed by seller to be paid for in full.

Title shall be merchantable, or purchaser will accept title insurance policy issued by qualified title insurance company in lieu of strictly merchantable title. If title is merchantable, purchaser shall pay for certificate of title; if title is found imperfect and seller cannot perfect title or obtain title insurance policy as above provided within 60 days after date fixed for closing, earnest deposit shall be returned to purchaser and seller shall pay to agent the sale commission and other costs including title charges. Seller shall pay for documentary stamps.

If, after contract is executed, the premises be destroyed or damaged by fire, windstorm or otherwise, seller shall restore same within thirty days if possible and sale closing date shall be extended accordingly, but otherwise purchaser shall have option of cancelling or enforcing contract; if enforced, purchaser shall be entitled to insurance; if cancelled, earnest deposit shall be returned to purchaser. In either event agent shall receive full sale commission. Seller shall assume risk of such destruction or damage and shall have the obligation to obtain consent of insurance companies to sale contract.

If improvements or additions have been completed within six months prior to sale closing date, seller shall furnish reasonable security against mechanics' liens or satisfactory evidence of payment of bills.

Property to be accepted in its present condition unless otherwise stated in contract. Seller warrants that he has not received any written notification from any governmental agency requiring any repairs, replacements, or alterations to said premises which have not been satisfactorily made. This is the entire contract and neither party shall be bound by representation as to value or otherwise unless set forth in contract.

The words purchaser, seller, agent and deposit where appearing in this contract shall be construed in the plural, if more than one.

This contract shall bind the heirs, legal representatives, successors and assigns of the parties hereto.

Contract assignable by purchaser, but not without consent of seller if purchase money deed of trust forms part of sale consideration.

Sale Commission as provided under the rules of the Real Estate Board of Metropolitan St. Louis: 6% of the total selling or exchange price on improved property and 10% on unimproved property; minimum charge $50.

Special Agreements between Seller and Purchaser forming part of Contract:

APPROVED

JAN 4 1963

State Purchasing Agent

APPROVED

JAN 8 1963

John D. Barlow, Jr.
DIRECTOR
Division of Planning & Construction

Shepard

March 6, 1968

Mr. John D. Paulus, Jr., Director
Division of Planning and Construction
Capitol Building
Jefferson City, Missouri 65101

Re: Land for Building Site --
St. Louis School for Retarded Children

Dear Mr. Paulus:

Enclosed you will find a Certificate of Title prepared by the St. Paul Title Insurance Corporation, 810 Chestnut, St. Louis, Missouri, relative to the property at January and Wilson in St. Louis which has been designated as the site for the construction of a new school for retarded children. This Certificate of Title will replace the one previously mailed to your office on February 2, 1968.

Will you please forward this Certificate to the Attorney General for his examination and report. Following his report, we would appreciate your approval and authorization to complete the purchase of this land. We are anxious to proceed with construction plans. Anything you can do to expedite this matter will be sincerely appreciated.

If additional information is needed, please let us know. Your cooperation in this matter will be greatly appreciated

Sincerely,

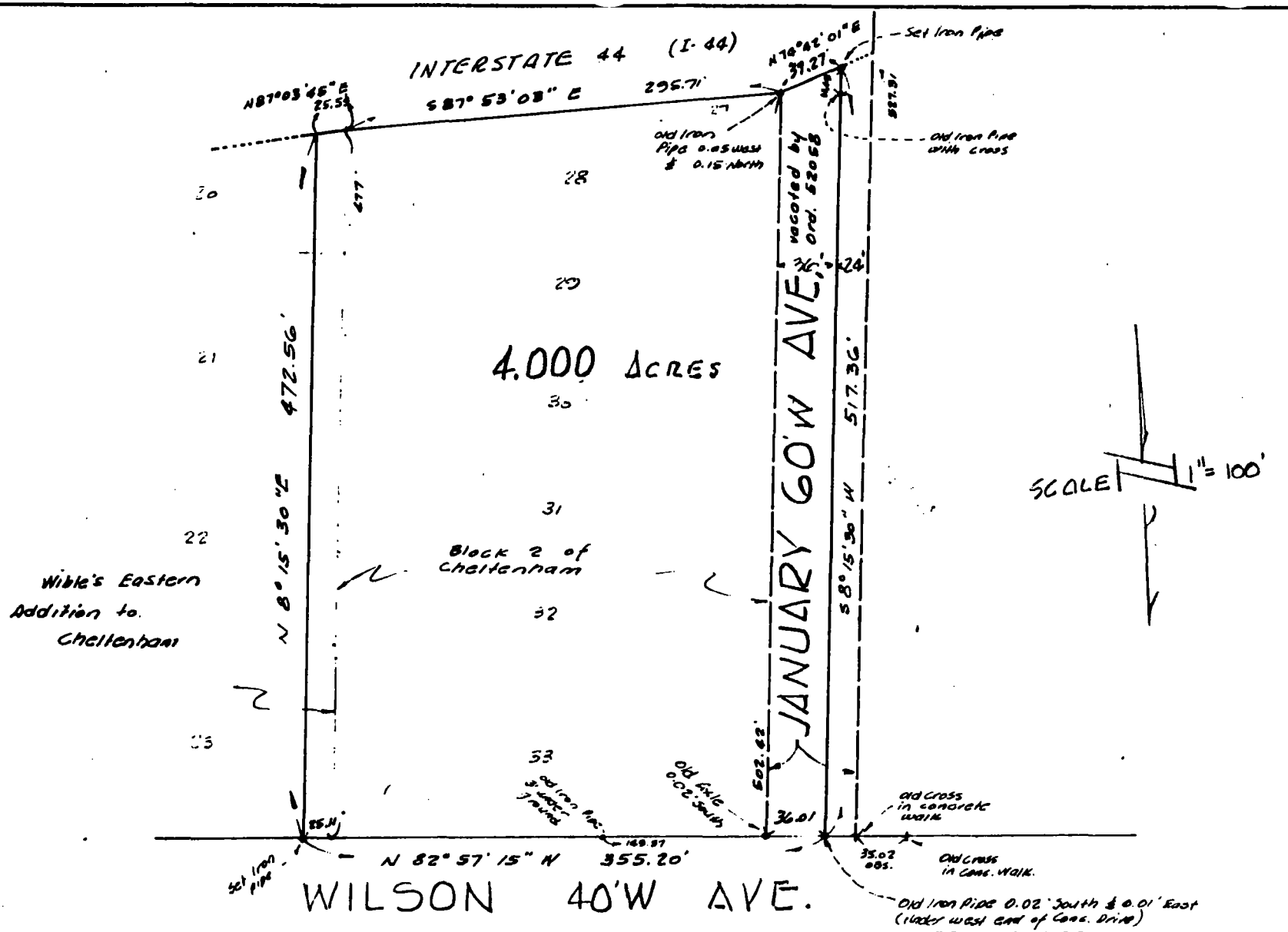
Hubert Wheeler
Commissioner of Education

Enclosure

BLOCK 4022 of the City of St. Louis, Mo

Wible's Eastern Addition to Cheltenham, Part Lots 1 thru 29. Block 2 of Cheltenham, Part Lots 27 and 28 and 29 thru 33 Vest 40' of Vacated January Ave South of I-44.

Job No



STOLWYK · McDANIEL · FERRENBACH, INC.

THIS IS TO CERTIFY that we, James Conalin Deputy at the request of J. J. Mooney & Co.

2-21-68 OUTBOUNDARY SURVEY 1364 JC.

HOUSE STAKEOUT

IMPROVEMENT SURVEY

IMPROVEMENT SURVEY

SMF

HAVE ON THE DATES NOTED BELOW PERFORMED THE FOLLOWING SURVEYS ON THE PROPERTY DESCRIBED ACCORDING TO THE PLAT RECORDED IN THE St. Louis City RECORDS.

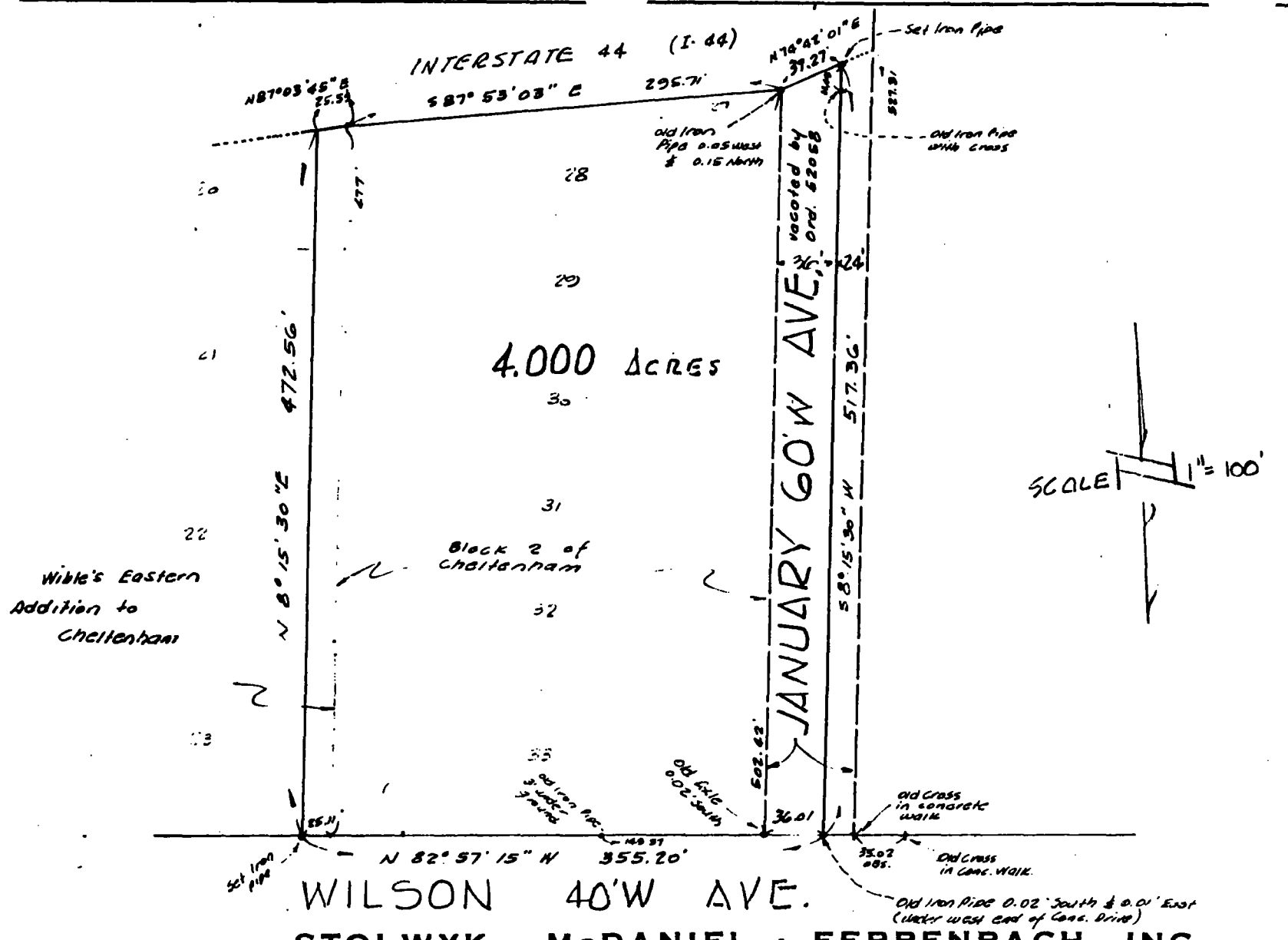
By Daniel Stolwyk

7701 FORSYTH ST. LOUIS, MO. 63105 PA 5-9228

BLOCK 4022 of the City of St. Louis, MO

Wible's Eastern Addition to Chelltenham, [illegible] "Block 2 of Chelltenham, Part Lots 27 and 28 and all "Lot 40" of Vacated January Ave South of I-44.

Job No



THIS IS TO CERTIFY that we, James Conolin Deputy at the request of C. J. Mooney & Co.

2-21-68 OUTBOUNDARY SURVEY 1364 JC.

HOUSE STAKEOUT

IMPROVEMENT SURVEY

IMPROVEMENT SURVEY

SMF

STOLWYK • McDANIEL • FERRENBACH, INC.

HAVE ON THE DATES NOTED BELOW PERFORMED THE FOLLOWING SURVEYS ON THE PROPERTY DESCRIBED ACCORDING TO THE PLAT RECORDED IN THE St. Louis City RECORDS.

By David Stolwyk

7701 FORSYTH ST. LOUIS, MO. 63105 PA 5-9228

2-21-68 DJS DWN

STATE DEPARTMENT OF EDUCATION
JEFFERSON CITY, MISSOURI 65101

HUBERT WHEELER
COMMISSIONER

February 2, 1968

Mr. John D. Paulus, Jr., Director
Division of Planning and Construction
Capitol Building
Jefferson City, Missouri 65101

Re: Land for Building Site --
St. Louis School for Retarded Children

Dear Mr. Paulus:

Enclosed you will find a Certificate of Title prepared by the St. Paul Title Insurance Corporation, 810 Chestnut, St. Louis, Missouri, relative to the property at January and Wilson in St. Louis which has been designated as the site for the construction of a new school for retarded children.

Will you please forward this Certificate to the Attorney General for his examination and report. Following his report, we would appreciate your approval and authorization to complete the purchase of this land. We are anxious to proceed with construction plans. Anything you can do to expedite this matter will be sincerely appreciated.

If additional information is needed, please let us know. Your cooperation in this matter will be greatly appreciated.

Sincerely,

Hubert Wheeler

Hubert Wheeler
Commissioner of Education

Enclosure

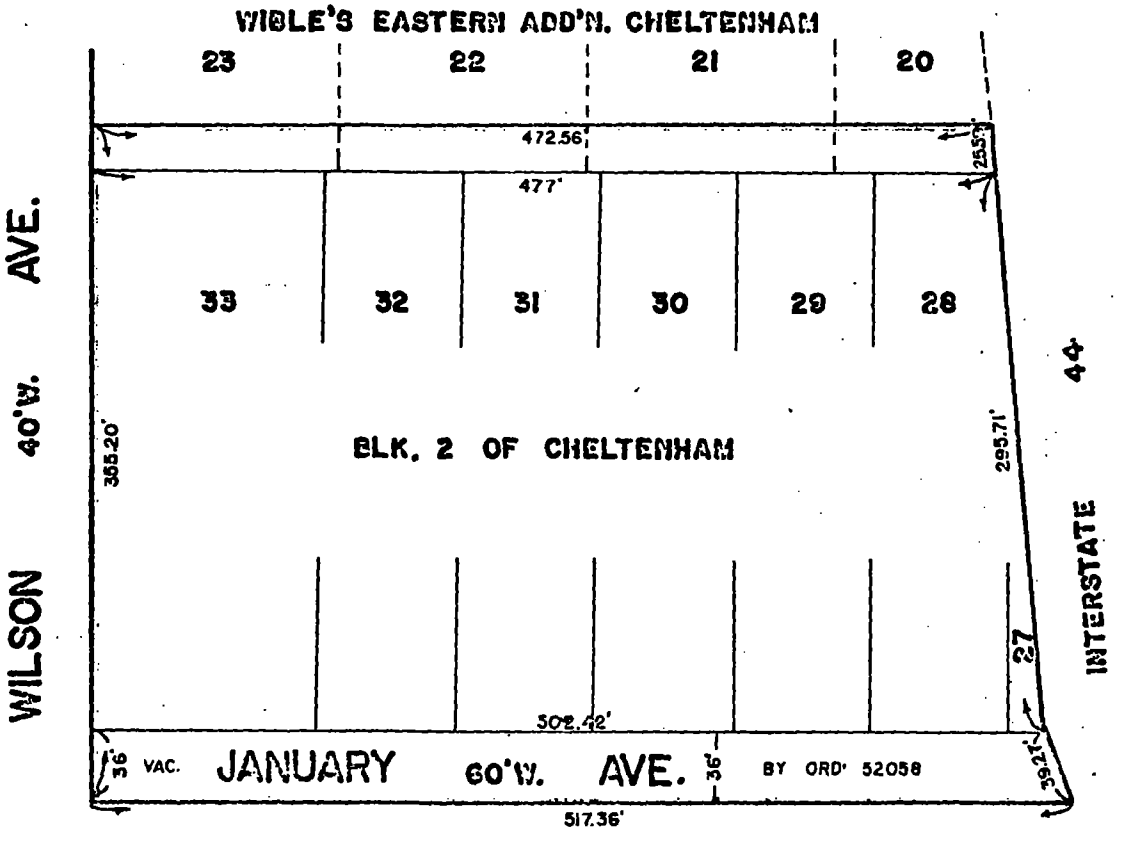
ST. PAUL TITLE INSURANCE CORPORATION

CITY OFFICE
810 CHESTNUT STREET
ST. LOUIS, MO. 63101
621-0813

COUNTY OFFICE
10 SOUTH CENTRAL AVE.
CLAYTON, MO. 63105
727-8131

CERTIFICATES OF TITLE AND TITLE INSURANCE

TRACT
IN
C.B.'s. 4022 & 4023



Noo-482768
F-171786

CERTIFICATE OF TITLE

ST. PAUL TITLE INSURANCE CORPORATION HAS EXAMINED THE TITLE TO THE FOLLOWING DESCRIBED PROPERTY SITUATED IN THE CITY OF ST. LOUIS, STATE OF MISSOURI; TO WIT:

Lots 29, 30, 31, 32, 33 and part of Lots 27 and 28 in Block 2 of CHELTENHAM, Lots 21, 22, 23 and part of Lot 20 of WIBLE'S EASTERN ADDITION to CHELTENHAM, together with the Western 36 feet of former January Avenue vacated under the provisions of Ordinance No. 52058, and in Blocks 4022 and 4023 of the City of St. Louis, more particularly described as follows: Beginning at a point in the North line of Wilson Avenue, 40 feet wide, at its intersection with a line 36 feet East of and parallel to the West line of former January Avenue, 60 feet wide, as vacated under the provisions of Ordinance No. 52058; thence North 82 degrees 57 minutes 15 seconds West along said North line of Wilson Avenue a distance of 355.20 feet to a point; thence North 8 degrees 15 minutes 30 seconds East a distance of 472.56 feet to a point in the Southerly Right-of-Way line of Interstate Highway I-44; thence in an Easterly direction along said Right-of-Way line North 87 degrees 03 minutes 45 seconds East a distance of 25.59 feet to an angle point being located in the Eastern line of Lot 20 of Wible's Eastern Addition to Cheltenham, said point being 477 feet North along the Eastern line of said Wible's Addition from the Northern line of Wilson Avenue, 40 feet wide; thence South 87 degrees 53 minutes 03 seconds East and along said I-44 Right-of-Way line 295.71 feet to a point in the West line of said former January Avenue vacated as aforesaid at a point being 502.42 feet North along said line from the Northern line of Wilson Avenue; thence North 74 degrees 42 minutes 01 seconds East along the South Right-of-Way line of I-44 a distance of 39.27 feet to a point in a line 36 feet East of and parallel to said West line of former January Avenue, vacated as aforesaid; thence South 8 degrees 15 minutes 30 seconds West along said line 36 feet East of the West line of former January Avenue, vacated as aforesaid, a distance of 517.36 feet to the point of beginning.

According to the St. Louis City Records, the fee simple title to said property is vested in:

RAYMOND J. McMANEMIN,
LAWRENCE J. CAMIE,
CARL C. SCIUTO,
CALOGERO RALLO,
SALVATORE RALLO,
NICK RALLO,
PETER J. RALLO,
JOSEPH S. RALLO,
CHARLES RALLO, JR.,
d/b/a HAMPTON INDUSTRIAL PARK,
the percentages being, 21%, 21%, 16%, 07%, 07%, 07%, 07%, 07%, 07%, respectively.

Free and clear of liens, except as follows, to-wit:

DEEDS OF TRUST: NONE.

GENERAL TAXES for 1967, and prior years not assessed as to that part of above described property constituting a part of a former street.
1968, a lien, as to all.

SPECIAL TAXES: NONE reported on books in Comptroller's Office, that are a lien.

JUDGMENTS: NONE.

MECHANICS' LIENS: NONE.

LEASE on above and other property executed by Ann S. Dattilo to Jablonow-Komm Theatres, Inc., a Missouri corporation, dated August 5, 1965 and recorded August 13, 1965 in Book 8617 page 122, for a term of 15 years beginning on or before June 1st, 1966 and ending May 31st, 1981, upon the terms, conditions and at the rental as is more fully set forth in said lease. Contains renewal option and purchase option.

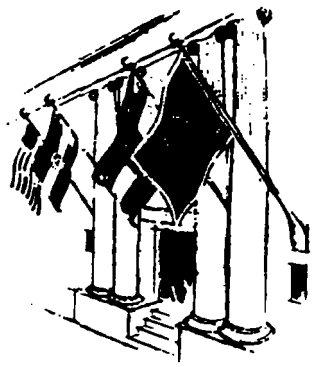
LEASEHOLD title NOT examined.

THIS certificate attempts to make no statement as to restrictions defined in any zoning ordinance or amendments thereto.

IN WITNESS WHEREOF, the ST. PAUL TITLE INSURANCE CORPORATION has caused this certificate to be signed by a duly authorized officer, and its corporate seal to be hereunto affixed, this 22nd day of January, 1968.

ST. PAUL TITLE INSURANCE CORPORATION
By _____
Authorized Officer.

_____
Examiner.
VVM/ls



NOV 6 1967

MERCANTILE TRUST COMPANY

NATIONAL ASSOCIATION

SAINT LOUIS, MISSOURI 63166, CENTRAL 1-3500

November 3, 1967

REAL ESTATE DEPARTMENT
REALTORS — MORTGAGE BANKERS

Mr. B. W. Sheperd
Director of the State Training Program
Department of Education
Jefferson Building
Jefferson City, Missouri 65101

Dear Mr. Sheperd:

Enclosed is drawing that was taken from survey of the entire vacant property on the south side of Manchester Avenue beginning at a point 267 feet west of Kingshighway and running in a westwardly direction on the south side of Manchester approximately 938.07 feet. This property has a depth on the west line of 310 feet and on the east line of 709 feet. The rear of the property abuts the Missouri Pacific Railroad and St. Louis San Francisco.

The west part of this property having a combined frontage of 352.17 feet has been sold. The most westwardly portion having a frontage of 50 feet has been purchased by Lumberyard Supply Company and is now enclosed with a cyclone fence; joining this property to the east and having a frontage of 302.17 feet has been sold to Avis Rent-a-Car Company. Deleting the part that has been sold, there still remains 585.90 feet fronting on Manchester Avenue.

Mr. L. M. Bailey, office manager of Sansone Realty Company listing agent of this property, explained to me this morning that Sea Pass Corp. which owns the entire tract and is located to the east of this property is going to use a portion of the east part of this property for their own use.

However, there will be approximately 3-1/2 acres left that is to be sold. Mr. Bailey stated this will consist of approximately 300 ft. to 350 ft. along Manchester by a southwardly direction to the railroad right-of-way. Because of the angle, over the rear of the property. The exact square footage will have to be determined by survey.

MERCANTILE TRUST COMPANY
NATIONAL ASSOCIATION
SAINT LOUIS

Again, may I say that the portion to be sold will begin east of the east line of property purchased by Avis Company.

This entire property is zoned K. The asking sale price is $2.00 per square foot. As I remarked to you and your committee when we inspected the property, I believe there is a possibility that it could be bought at probably $1.75 per square foot.

I know that your engineers will have to inspect the property before any decision can be made.

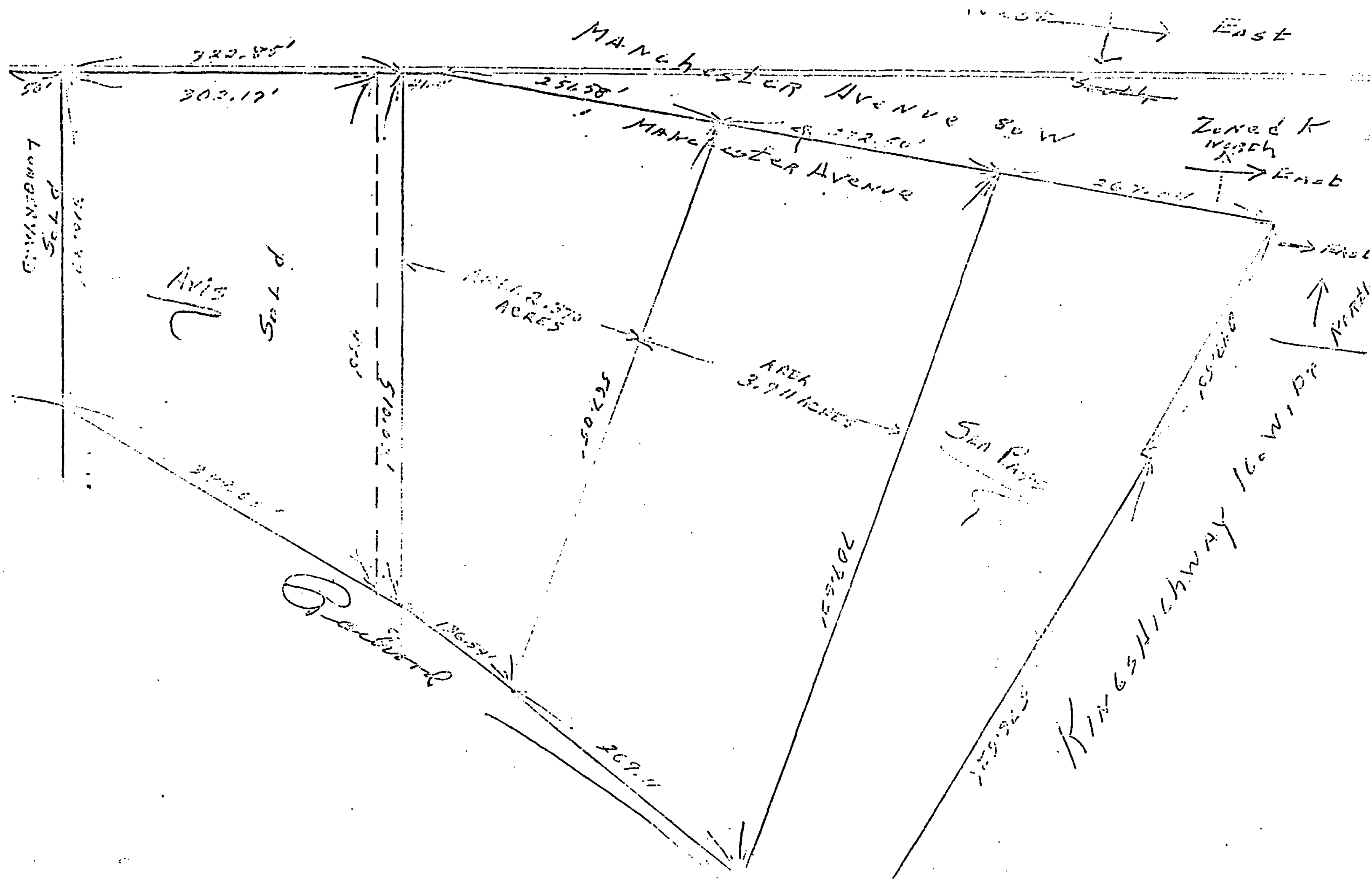
Mr. Bailey of Sansone's office stated that there is some interest in this property from other sources.

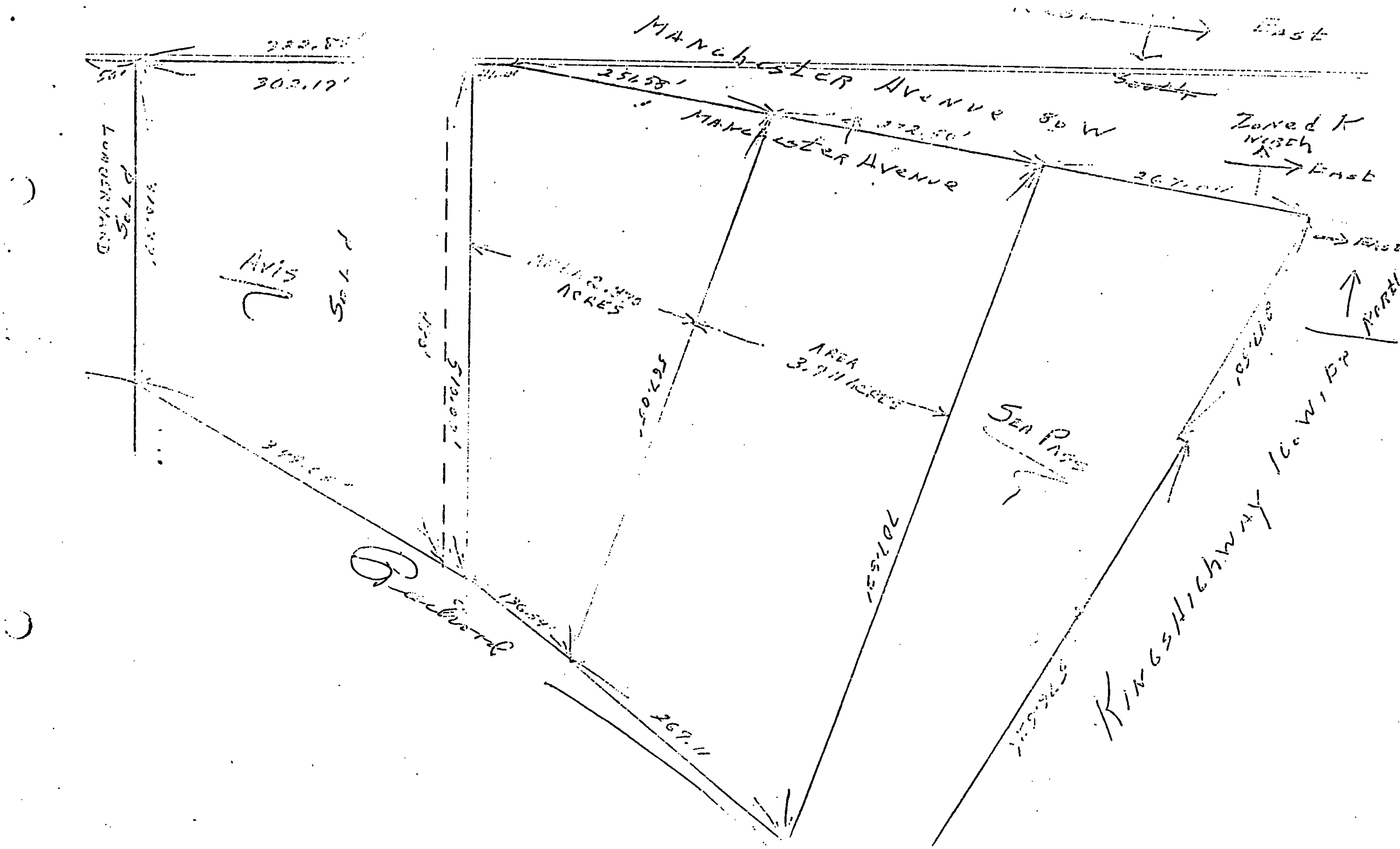
If there is any other information that you need, kindly contact me. I will be waiting to hear from you at your earliest convenience.

Yours very truly,

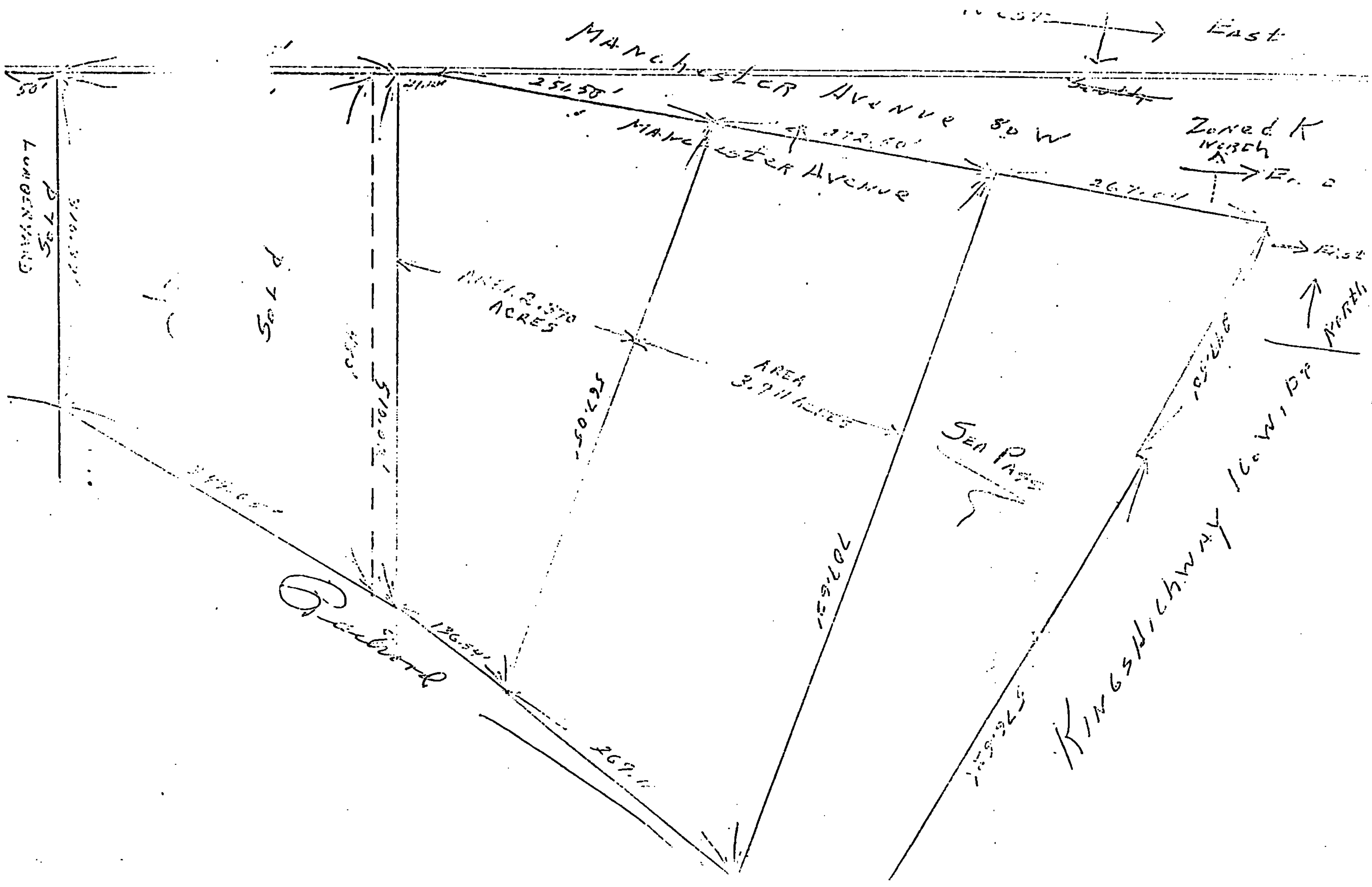
George W. Riess

mal
cc: Mr. H. Kenneth Kirchner
Mr. Frank Ackerman

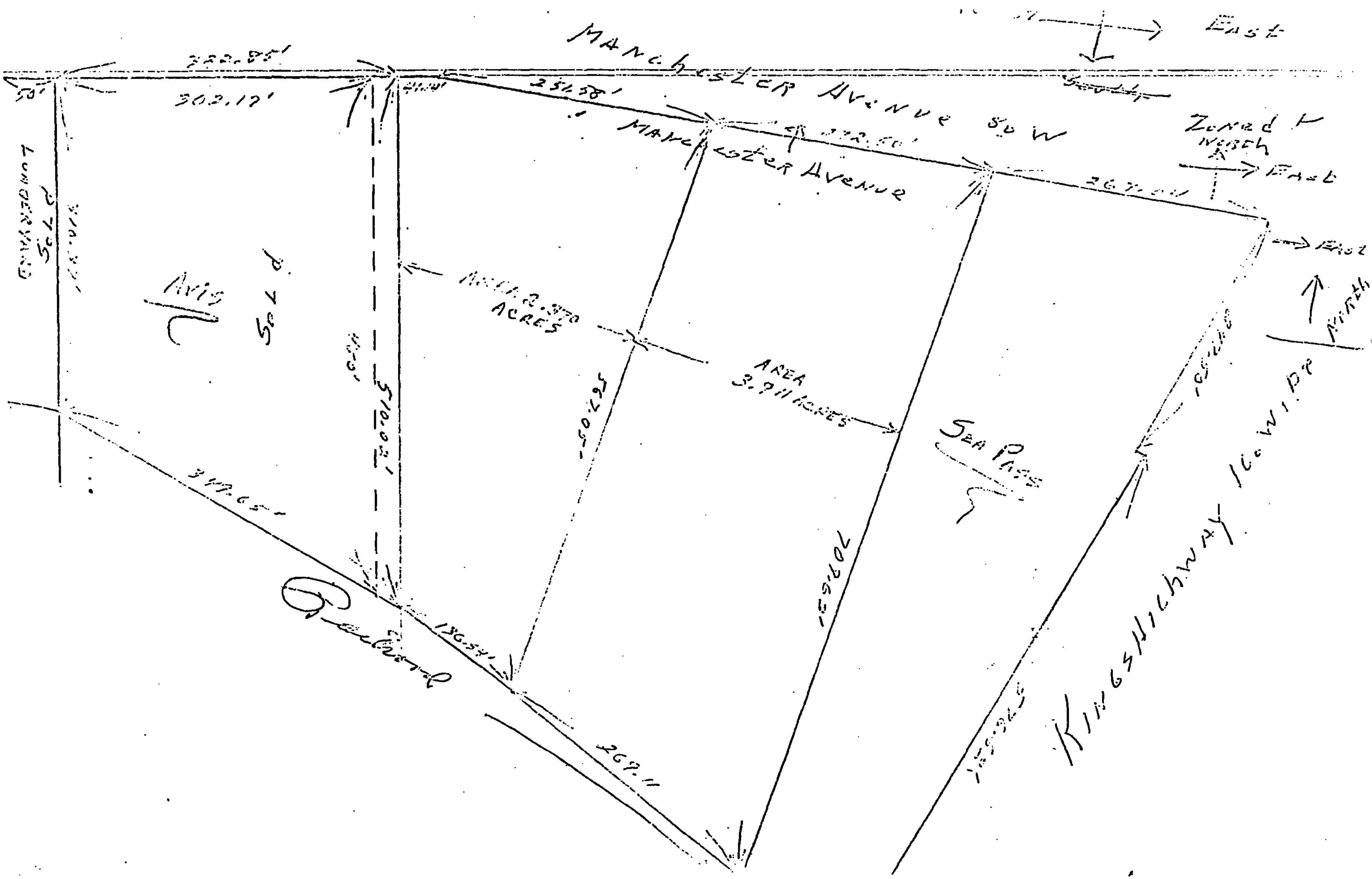

Manchester Avenue
Manchester Avenue
East
Zoned K
722.85'
302.17'
256.58'
Avis
Sold
Sold
Area 3.911 Acres
Kingshighway



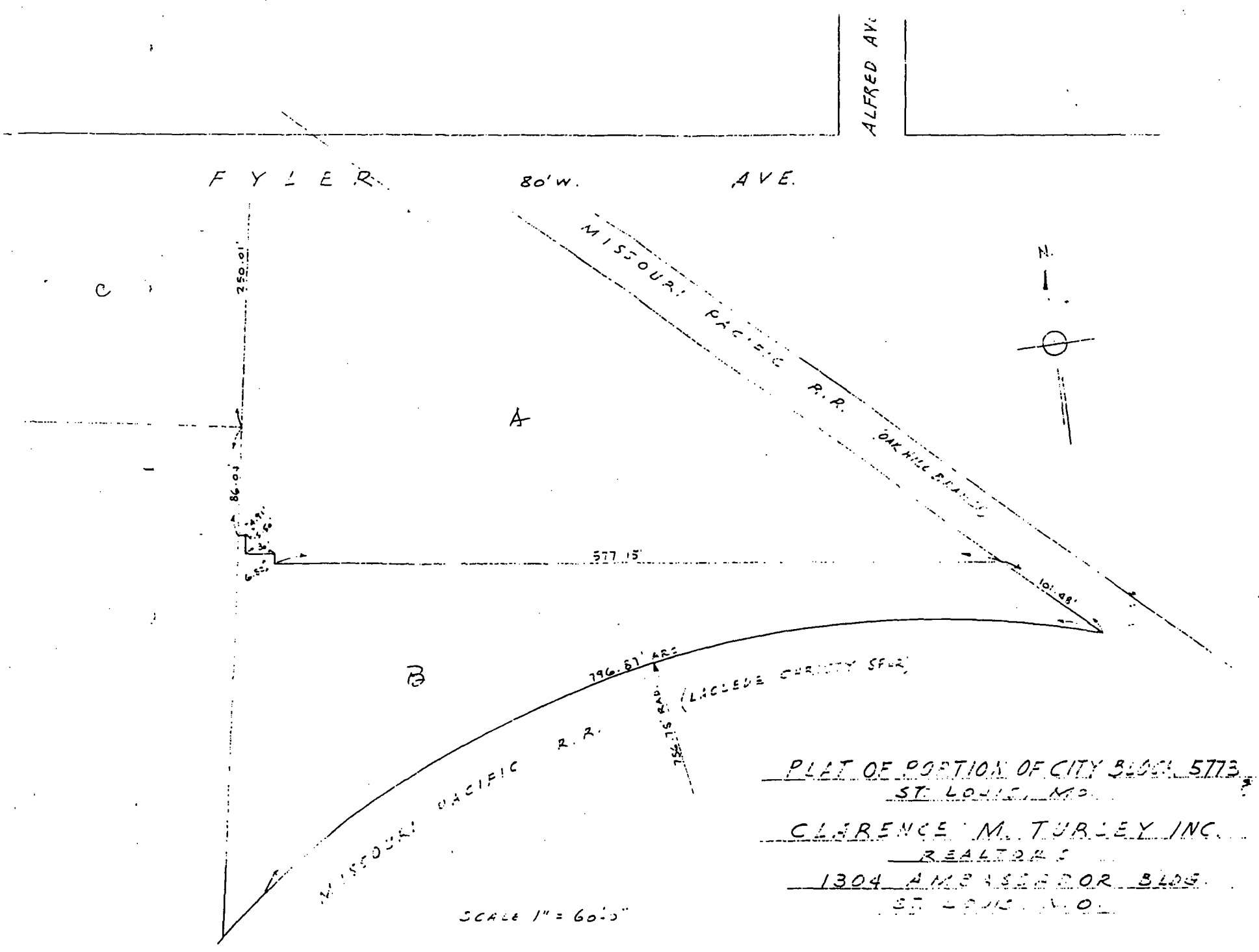
MANCHESTER AVENUE 80 W
MANCHESTER AVENUE
East
South
Zoned K
Width
East
North
KINGSHIGHWAY 100 W
AREA 3.9 ACRES
Sea Pass
Avis
Sold
Sold
302.17'
251.58'
267.11
136.54'
Goodwood



East
MANCHESTER AVENUE 80 W
251.58'
MANCHESTER AVENUE
Zoned K
NORTH
50'
Sold
Sold
AREA 2.370 ACRES
AREA 3.911 ACRES
136.54'
267.1

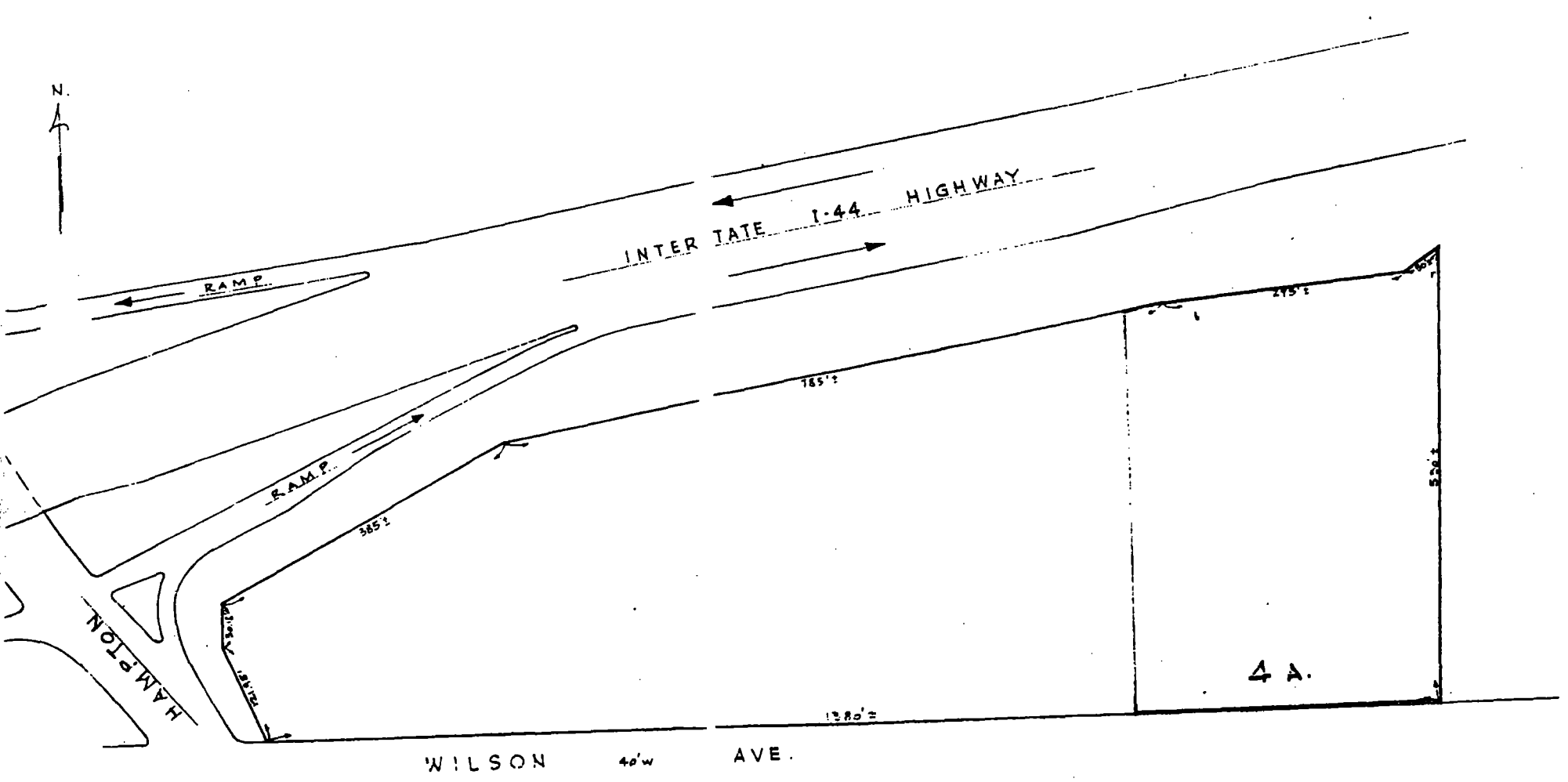


MANCHESTER AVENUE
East
Zoned F
East
East
North
322.85'
302.17'
251.58'
MANCHESTER AVENUE
267.11
Sold
Avis
Sold
ACRES
AREA
3.911 ACRES
SEA PASS
KINGSHIGHWAY



PLAT OF PORTION OF CITY BLOCK 5773
ST. LOUIS, MO.

CLARENCE M. TURLEY INC.
REALTORS
1304 AMBASSADOR BLDG.
ST. LOUIS, MO.



HAMPTON INDUSTRIAL PARK

ST. LOUIS, MO.

CLARENCE M. TURLEY, INC.

REALTORS

1304 AMBASSADOR BLDG.

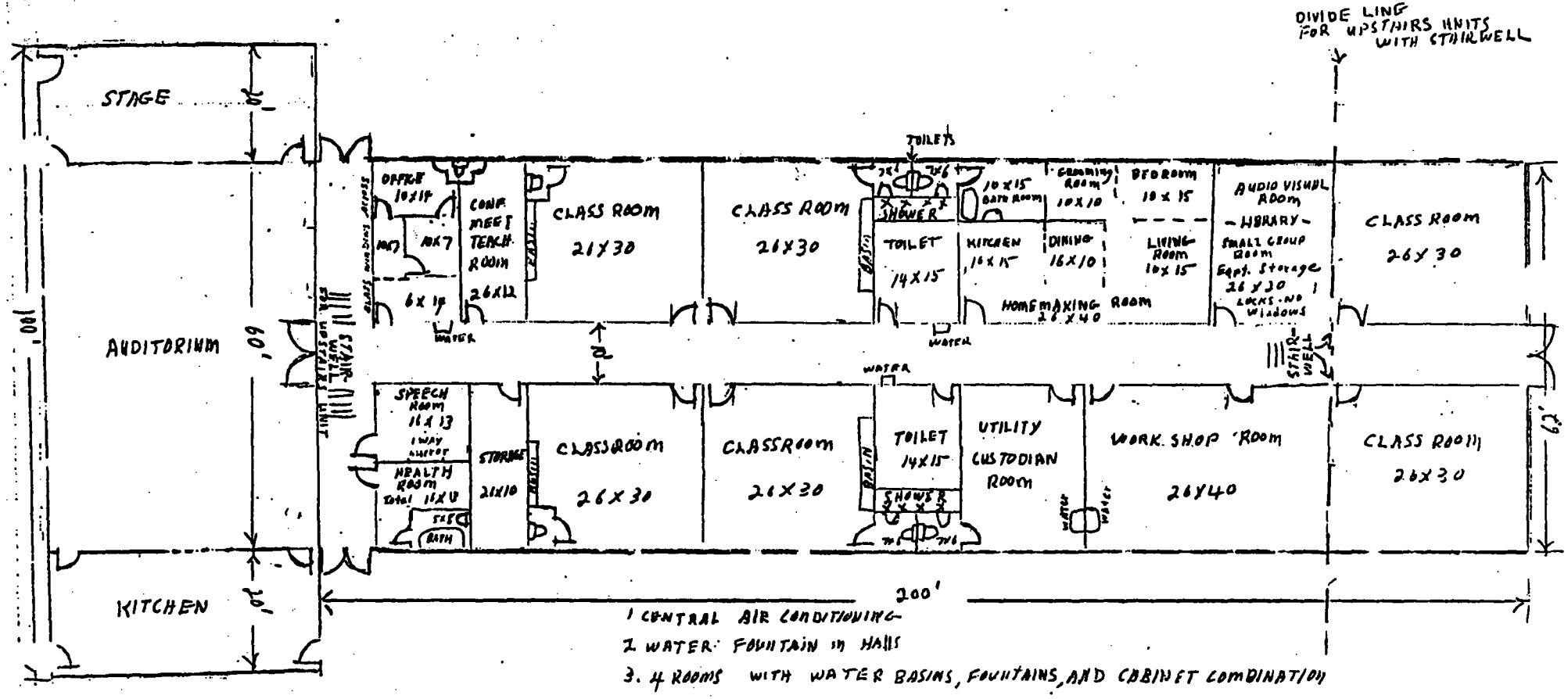
ST. LOUIS, MO.

12/23/57

PROPOSED PLAN FOR 8 CLASSROOM UNIT

FOR

MISSOURI SCHOOLS FOR THE RETARDED



1. CENTRAL AIR CONDITIONING
2. WATER FOUNTAIN IN HALLS
3. 4 ROOMS WITH WATER BASINS, FOUNTAINS, AND CABINET COMBINATION
4. WIRING FOR CLOSE CIRCUIT TELEVISION IN EACH ROOM - MASTER CONTROLS IN AUDIO-OFFICE
5. UPSTAIRS AREA FOR LARGER SCHOOLS - K.C. & ST.L.
   1. Speech Room
   2. CUSTODIAN closet
   3. Conference Room
   4. TESTING ROOM

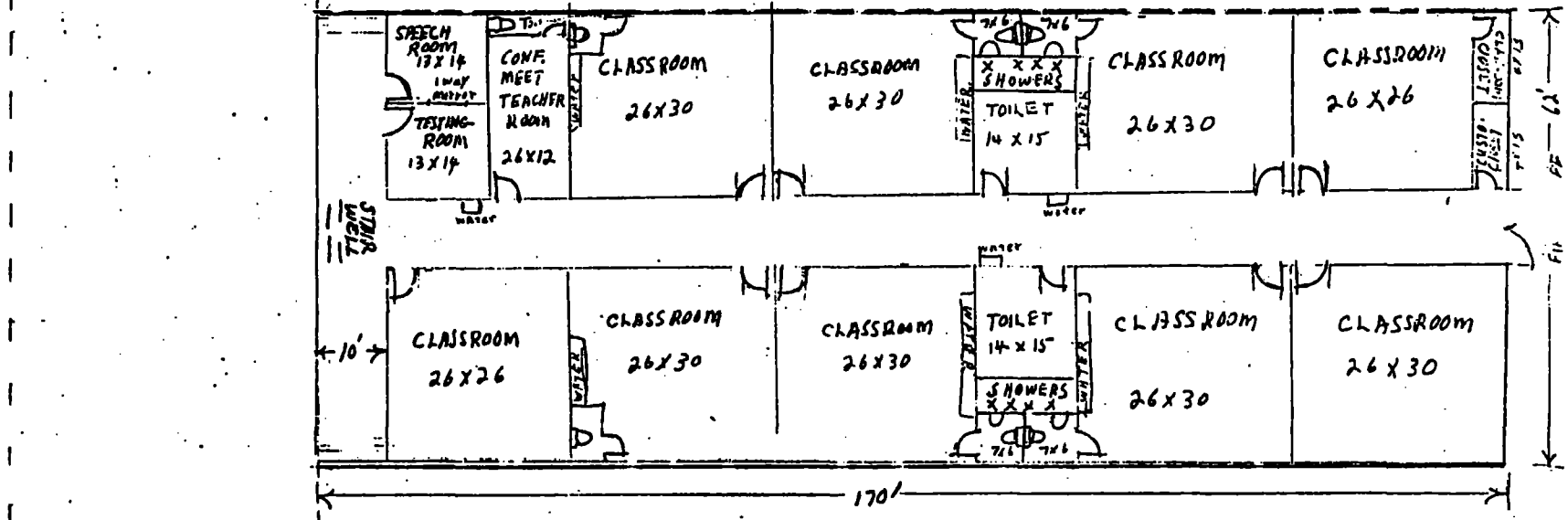
STAGE LIGHTS ON DIMMERS

SCALE 1/2" = 10'

PRC D FLOOR PLAN (UPSTAIRS) FOR 15 CLASSROOM UNIT

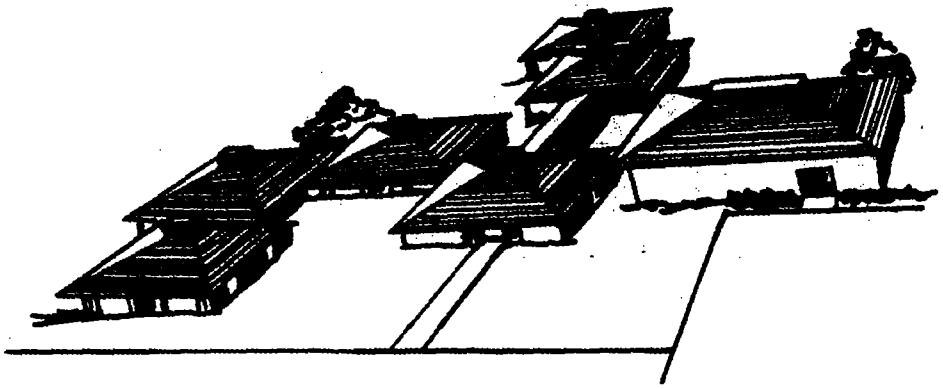
FOR

THE MISSOURI SCHOOLS FOR THE RETARDED



SCALE 1/2" = 10'

OPEN HOUSE



Hubert Wheeler State School

5707 Wilson Avenue
St. Louis, Missouri

December 13th, 1970
2:00 to 4:00 p.m.

State Board of Education
and
Parent Teacher Organization

PROGRAM

Invocation ..... Rev. William R. Dillon, Jr.

Welcome and Introductions ..... B. W. Sheperd
Director, State Schools

State School Program ..... H. K. Kirchner
Assistant Commissioner

Recognition and Naming of
New School ..... Burton F. Sawyer
President, State Board of Education

Response ..... Hubert Wheeler
Commissioner of Education

****

Presentation of Area Supervisor

Rhythmics ..... State School Pupils

Musical Numbers ..... State School Pupils

****

Conducted Tour of Buildings
Followed By
Reception in Auditorium
(Please Sign Guest Register)

****

PARENT TEACHER OFFICERS
1970-71

President	Mr. Joseph Luna
Vice-President	Mrs. Viola Curry
Recording Secretary	Mrs. Ella Feltman
Corresponding Secretary	Mrs. Carolyn Jones
Treasurer	Mrs. Hildegard Sahten
Faculty Representative	Mr. L. D. Ballinger

SCHOOL PERSONNEL

Mr. L. D. Ballinger	Area Supervisor
Mr. Finest L. Gilkey	Home-School Coordinator
Mrs. Mary Adderley	Teacher
Mrs. Marie Berry	Teacher
Mrs. Merceline Bouie	Teacher
Mrs. Etta Byes	Teacher
Miss Hazel Carr	Teacher
Mrs. Marie DeBow	Teacher
Mrs. Susie Dent	Teacher
Mrs. Esther Deppong	Teacher
Miss Kathleen Garcia	Teacher
Mrs. Alice Gdowski	Teach
Mrs. Anna James	Teacher
Mrs. Jimmie McCollum	Teacher
Mrs. Gloria Morgenstern	Teacher
Mr. John Patredis	Teacher
Mrs. Ernestine Pritchard	Teacher
Mrs. Ruby Rhodes	Teacher
Miss Martha West	Teacher
Mrs. Geraldine Williams	Teacher
Mrs. Mildred Williams	Music Teacher
Miss Joyce Nichols	P. E. Teacher
Miss Ruth Reed	School Nurse
Miss Donna Dearinger	Speech Clinician
Mrs. Mary Beth Gagnepain	Speech Clinician
Mrs. Ann Brock	Secretary
Mrs. Louise Beiser	Receptioni
Mr. Richard Hopson	A
Mrs. Hannah Jackson	Aid
Miss Christine Patton	Aid
Mrs. Ellen Brocks	Teacher Aid
Mrs. Mary Moore	Teacher Aid
Mrs. Ollie Reynolds	Teacher Aid
Mrs. Bettie Ward	Teacher Aid
Mrs. Olivia Woodruff	Teacher Aid
Mrs. Angela Moody	Cook
Mrs. Carolyn Madl	Cook
Mr. Will E. Crawford	Custodian
Mr. Richard Madl	Custodian

State School No. 13

St. Louis, Missouri

1959-60	9 teachers	99 pupils
1960-61	10 teachers	99 pupils
1961-62	14 teachers	133 pupils
1962-63	16 teachers	138 pupils
1963-64	17 teachers	142 pupils
1964-65	17 teachers	142 pupils
1965-66	17 teachers	146 pupils
1966-67	17 teachers	160 pupils
1967-68	18 teachers	168 pupils
1968-69	18 teachers	200 pupils
1969-70	18 teachers	207 pupils
1970-71	20 teachers	230 pupils

The estimated total cost of the Hubert Wheeler State School including land acquisition, building construction, professional services and equipment $1,132,413.00.

A1 SITE PLAN LOCATION PLAN

A2 FIRST FLOOR PLAN · KITCHEN FLOOR PLAN · ELEVATIONS OF RESTROOMS 2B & 2b LEGENDS

A3 FIRST FLOOR PLAN · SECOND FLOOR PLAN · EXHAUST FAN NOTES · LEGEND

A4 FINISH SCHEDULE · CLASSROOM ELEVATIONS

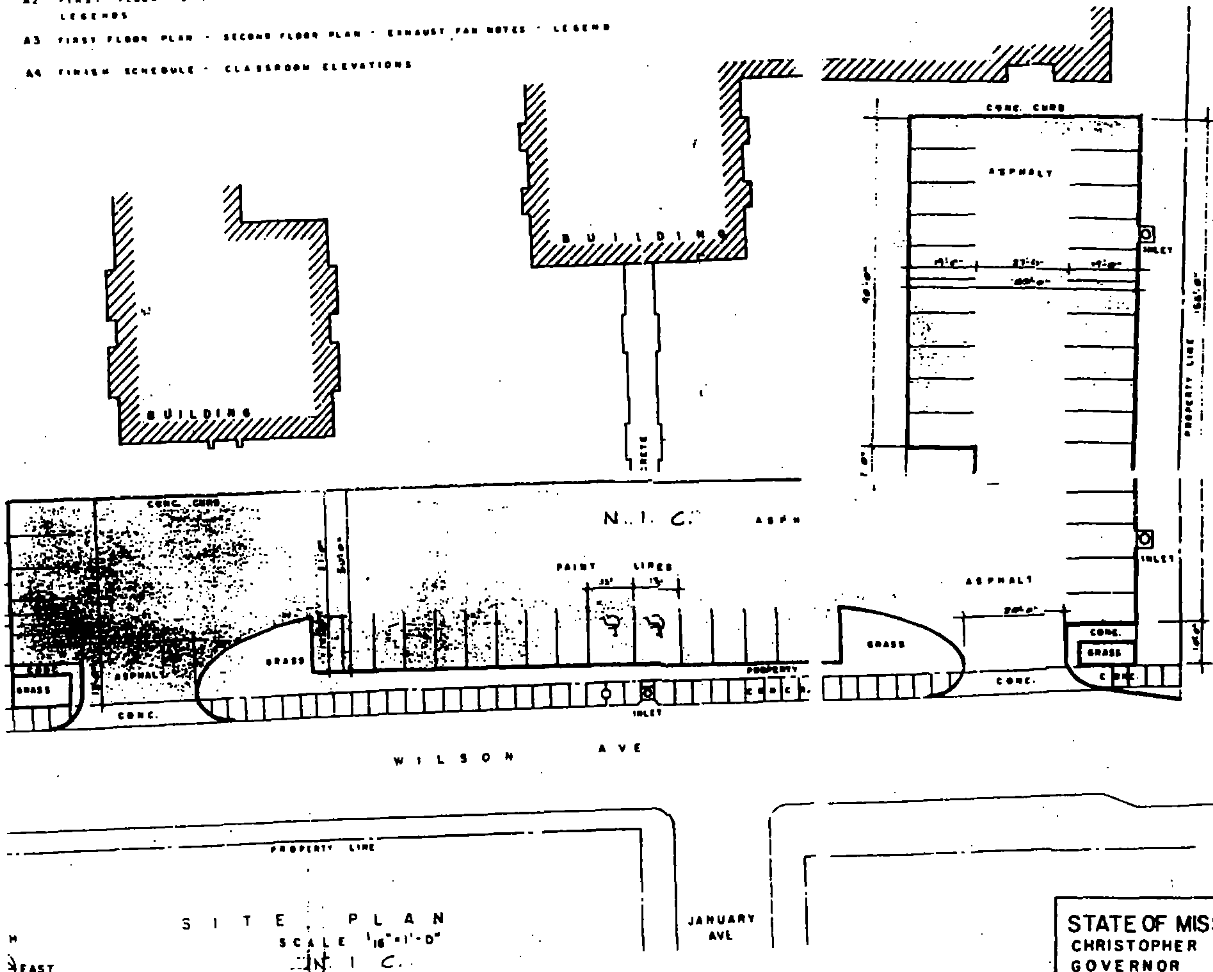
N. I. C.

PAVEMENT ALTERATIONS

REPAIR CRACKS

INSTALL TWO PROTECTIVE COATINGS

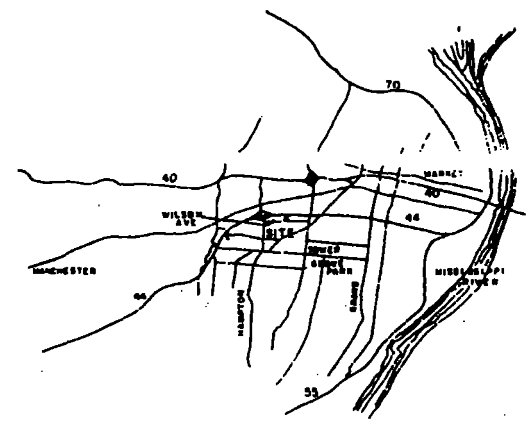
PAINT



SITE PLAN

SCALE 1/16"=1'-0"

N. I. C.



LOCATION MAP

FINAL FILE

PROJECT NUMBER 05-523-3-0012

ACCOUNT NUMBERS
300-31283-4513
523-31336-4604
523-53043-3003
523-53044-3004

STATE OF MISSOURI
CHRISTOPHER S. BOND
GOVERNOR

OFFICE OF ADMINISTRATION
DIVISION OF DESIGN & CONSTRUCTION
WALTER H. JOHNSON P.E. DIRECTOR

DEPARTMENT OF ELEMENTARY AND SECONDARY EDUCATION
DR. ARTHUR L. MALLORY COMMISSIONER

EDWARD J. THIAS ARCHITECT
13 ROOSEVELT DR 314-8436084
SUNSET HILLS MISSOURI 63127
LINNEL ELAM CONSULTING ARCHITECT

REVISED

EXTERIOR AND INTERIOR RENOVATIONS, REPAIRS AND HANDICAPPED MODIFICATIONS
STATE SCHOOL FOR SEVERELY HANDICAPPED
HUBERT WHEELER STATE SCHOOL
ST. LOUIS, MISSOURI

SHEET NUMBER A-

ISSUE

File: Hubert Wheeler State Sch

Contaminants Close Wheeler State School

Tar-Like Substance Oozing On Playground

By Melanie Robinson
Of the Post-Dispatch Staff

The Hubert Wheeler State School for Severely Handicapped in St. Louis was closed Friday after six chemical contaminants, including coal tar byproducts, were found on school grounds.

Officials closed the school, at 5707 Wilson Avenue, after they saw a tar-like substance oozing from cracks on the playground.

The contaminants "are semivolatile, so they will vaporize," said Ed Sadler, hazardous wastes program director for the Missouri Department of Natural Resources. "Inhalation or direct contact may cause a health problem."

If a student comes in contact with the contaminants, "playing in the dirt, putting hands in mouth or not washing up before eating a sandwich" could be dangerous, Sadler said.

Classes are being arranged for 110 Wheeler students at the Gateway State School for Severely Handicapped, 100 South Garrison Avenue, and at the Missouri School for the Blind, 3815 Magnolia Avenue. Enrollment for reassigned students will begin Aug. 29 at Gateway School. Classes will begin as scheduled on Sept. 1.

Some of the contaminants exceeded safety levels set for residential areas by the Missouri Department of Health, said Nanci Gonder, spokesman for the Missouri Department of Health.

A possible reason for the contamination may be that the school, built in 1970, rests on "an old clay pit and a coal tar facility," said Sadler. Those plants were operated "prior to hazardous waste laws," he said.

"Only further testing will determine how far, how deep and how bad" the contamination is, Sadler said. When the extent of the contamination is determined, a decision can be made about cleanup.

Illino

HUBERT WHEELER STATE SCHOOL

PA/SI REFERENCE 40

3 Refuges, [illegible]

By Tom Strong
Of The Associated Press

WASHINGTON — Plans to acquire more land next year for three national wildlife refuges and the Shawnee National Forest in Illinois await action by congressional negotiators working on a final interior spending bill.

At stake is about $3.6 million to continue preservation efforts in central and Southern Illinois.

"Whatever we get, we feel can be spent" to restore the natural habitat, said Jerry Updike, manager of the Cypress Creek National Wildlife Refuge, south of Carbondale, Ill., and encompassing Cache River wetlands.

A conference committee of senators and representatives probably will not begin writing the final spending bill until after the Labor Day recess. The negotiators must reconcile differences in funding levels passed by each chamber.

The Senate approved $1.5 million for Cypress Creek, but the House set aside no money for the project.

The leading players in negotiations are Rep. Sidney Yates, D-Chicago, and Sen. Robert Byrd, D-W.Va., chairmen of their chamber's interior appropriations subcommittees.

At Cypress Creek, the government has acquired 11,000 acres from 80 landowners since the refuge was created in 1990. Under[illegible] there are 240 landowners proved purchase boundar 35,000 acres.

The refuge includes swamps, ponds, bottoml wood forest and southern adjacent to the Cache F river's wetlands are amon important and biologically the Midwest. The area als populations of 61 plants a listed as threatened or end Illinois.

Two central Illinois pr await funding.

The House and Senate proved $500,000 for the National Wildlife Refuge, of Peoria in Fulton Cou

Driver Kill

A St. Louis motorist sho a man Friday who tried t car.

The dead man, Pedro was one of three young tried to steal an older-mod let Monte Carlo about 2:2 day, police said.

Miles was shot once in He lived in the 5800 bloc Avenue.

Police said the shooting

POLICE/COURTS

The following incidents were among those that were reported to police departments in the St. Louis metropolitan area or that involved action in one of the area's courts:

COURT ACTIONS

St. Louis: Daniel L. Zessinger, a former stockbroker, was sentenced Friday to 33 months in prison for buying and selling securities in customers' accounts without telling them. Besides the prison term, U.S. District Judge Donald J. Stohr ordered Zessinger to pay $104,350 in restitution. Zessinger, 34, of St. Charles pleaded guilty in May to one count of mail fraud. Zessinger's scheme ended May 18, 1992, when he was fired as a broker for Prudential-Bache Securities Inc. in Chesterfield. In 1991, Zessinger began persuading customers to write checks for what they believed were real estate investments, federally insured mortgages or mortgage notes, the U.S. attorney's office said. Zessinger used most of the money to cover trading losses he had caused in customer accounts.

ARRESTS

St. Louis: Three men wanted for a murder in Massachusetts were in custody Friday after being arrested by St. Louis police and the U.S. Marshal Service. Authorities arrested Rodarius Servick, 19, early Friday at a relative's house on Hodiamont Avenue. He is charged with killing a 19-year-old on Aug. 7 in Worcester, Mass. Arrested here for accessory to murder were David Scott Howard, 23, of Bellefontaine Neighbors, and Joseph Williams, 25, of East St. Louis. Servick is originally from St. Louis.

Rober Dowd, . Nan ed

News Release

Information from the Missouri Department of Elementary and Secondary Education
P.O. BOX 480, JEFFERSON CITY, MISSOURI 65102

Contact: James L. Morris
Director of Public Information
Phone 314/751-3469

HUBERT WHEELER STATE SCHOOL

PA/SI REFERENCE 41

Vol.28, No.25
August 19, 1994

Wheeler State School closed pending further tests for chemical contaminants

The Department of Elementary and Secondary Education has closed the Hubert Wheeler State School for Severely Handicapped in St. Louis after chemical contaminants were found in soil samples taken in the school yard this summer. The school is located at 5707 Wilson Ave. in St. Louis, just south of I-44 at Hampton Avenue.

Fifty-four staff members and 110 students were scheduled to start fall classes at the school on Sept. 1. A six-member regional administrative staff associated with the State Schools for Severely Handicapped also has offices in the building.

Concern about the presence of a tar-like material found on the grounds at the school led Department of Education officials to hire an environmental services firm to test the soil in the school yard. Several chemical contaminants were found in the samples, and some exceeded the safe levels set for residential areas by the Missouri Department of Health.

"First and foremost we are concerned about the health and safety of the Wheeler students and staff," said John Allan, assistant commissioner for special education at the Department. "We have reviewed our consultant's report with representatives from the state departments of Health and Natural Resources. Although our soil testing to date has been limited and we are waiting for the Department of Natural Resources to confirm these initial results, we feel our only option at this point is to close

(more)

the school and reassign classes."

The Department of Education is arranging classes for Wheeler students at the Gateway State School for Severely Handicapped, 100 S. Garrison, and at Missouri School for the Blind, 3815 Magnolia Ave. Entire classes will be reassigned with their regular teachers and aides, if possible.

Enrollment for all reassigned Wheeler students will be held on Aug. 29 at Gateway School. Wheeler students will start school on Sept. 1 in their newly assigned buildings.

The Department of Education is notifying Wheeler staff members and parents about the school closing and reassignment of classes by letter and by phone. The Department also plans to schedule a meeting where staff and parents can discuss the contamination problem and potential health risks with representatives from the departments of Health and Natural Resources.

The State Schools Area III administrative staff members also will move from the Wheeler building as soon as new offices can be located for them.

The Department is making arrangements to have more extensive testing done at the school, which will remain closed indefinitely, Allan said. No decisions can be made regarding cleanup of the site until the extent of the contamination is determined, he added.

The Department of Education purchased the Wilson Avenue property in 1968 and constructed the school on the site. The building opened in 1970.

##

NOTE TO EDITORS AND NEWS DIRECTORS: For more information about the closing of Hubert Wheeler State School, contact Nancy Bedan, Public Information Office, Department of Elementary and Secondary Education (phone 314/751-3469), or Wanda McPheron, assistant superintendent, State Schools for Severely Handicapped (phone 314/751-4427).

Because the expertise of Department of Education staff members is limited to school-related matters, please call Nanci Gonder at the Missouri Department of Health, phone 314/751-6062, or Nina Thompson at the Missouri Department of Natural Resources, phone 314/751-1010, for other information.

ROBERT E. BARTMAN
Commissioner of Education

HUBERT WHEELER STATE SCHOOL

PA/SI REFERENCE 42

DEPARTMENT OF ELEMENTARY AND SECONDARY EDUCATION
P.O. BOX 480
JEFFERSON CITY, MISSOURI 65102-0480

August 17, 1994

Dear Parents and Staff of Hubert Wheeler State School
and Gateway State School:

As some of you may be aware, the Department of Elementary and Secondary Education has been concerned about a tar-like material found on the grounds at Hubert Wheeler State School. This summer we hired a company to do more extensive testing of the soil in the school yard. We have just received the initial results of those tests, which indicate there are unsafe levels of several chemicals in the soil.

We have discussed the results of these soil tests with staff at the state departments of Health and Natural Resources. On their advice, we have decided to close Hubert Wheeler State School while we wait for the Department of Natural Resources to confirm the initial test results. In addition, we plan to conduct more tests in and around the school.

The health of our students and staff is utmost in our minds. Currently, we have no evidence that this problem has affected the health of staff or students. We will continue to work with the Department of Health and will send you additional information when it becomes available.

In addition, we will schedule a meeting for Hubert Wheeler parents and staff in the near future. We will invite representatives from the departments of Health and Natural Resources to attend and respond to your questions.

Next week, we will notify you by letter and by phone about reassignments for the 1994-95 school year. At present, we are planning classes for Wheeler students at Gateway State School in St. Louis and the Missouri School for the Blind near Tower Grove Park. We will make every effort to move entire classes with their regular teachers and aides.

Enrollment for Hubert Wheeler students attending both Gateway School and Missouri School for the Blind will be held on August 29, 1994, at Gateway School, 100 S. Garrison, in St. Louis.

We apologize for this inconvenience and for the short notice. We ask for your help and cooperation in making the best of this situation.

Sincerely,

Wanda McPheron

Wanda McPheron
Assistant Superintendent
State Schools for Severely Handicapped

WMS

HUBERT WHEELER STATE
SCHOOL

PA/SI REFERENCE 43

MISSOURI DEPARTMENT OF NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL QUALITY
ENVIRONMENTAL SERVICES PROGRAM

Site Inspection Sampling Report
Hubert Wheeler State School Site
5707 Wilson Avenue
St. Louis, Missouri
July 7, 1994

INTRODUCTION

As authorized under the federal CERCLA (Comprehensive Environmental Response, Compensation, and Liability Act), the MDNR (Missouri Department of Natural Resources), HWP (Hazardous Waste Program) requested the MDNR, ESP (Environmental Services Program) to conduct sampling as part of an SI (Site Inspection) currently underway. On July 7, 1994, ESP Environmental Specialist Brian Allen collected surface soil grabs at the Hubert Wheeler State School site. Information learned from sampling and field observations will be used to assist the HWP score the site's potential as a hazardous waste site under the CERCLA Hazard Ranking System. HWP Investigator Al Wallen was present for a portion of the sampling. Sam Brenneke and Don Dierdorf of Geotechnology, Incorporated, consultants for the Missouri DESE (Department of Elementary and Secondary Education), were on-site conducting a site investigation on this date.

The site is located in the City of St. Louis, southeast of the intersection of I-44 and Hampton Avenue. The site can be entered by following Hampton Avenue south to Wilson Avenue, then east on Wilson Avenue. The site is located on the north side of the street.

SITE DESCRIPTION AND HISTORY

The Hubert Wheeler State School serves severely developmentally disabled students. During recent years, a black tar-like material has occasionally oozed from the ground surface in the courtyard area at the northwest corner of the school property. The school placed asphalt paving over the courtyard area to minimize problems associated with the tar-like material. The oozing continues to surface in several areas, though most pronounced in an area where a concrete sidewalk abuts the asphalted area (now a playground). School maintenance personnel reported the black material to be "flowing" during excavation for the concrete walkway at a depth of three feet. At least one drum was also discovered during the walkway excavation.

Historical operations at the site include use as a storage area by a coke and foundry supply as well as being the location of a fire brick manufacturing company. Reports have also been relayed that the school may be built upon demolition fill from area construction activities and possibly from demolition of buildings once used on-site. The City of St. Louis may have also used the site as a landfill in the past.

The DESE hired a consultant to conduct a subsurface assessment of the asphalt playground. Sampling conducted by the consultant has shown a significant lead level in the on-site soils and several volatile and semi-volatile organics (typical of coal-tar contamination). Geotechnology conducted composite surface soil sampling on July 7, 1994, as part of its continuing investigation in an effort to delineate the areal extent of any contaminants which may be present at the surface. MDNR was present to conduct the SI sampling during planned investigation activities by the consultant to minimize disruption to the school.

METHODS

Soil grab samples were collected with either clean or field decontaminated stainless steel bucket augers. The soil was transferred to clean aluminum foil pans. The volatile organics portion of the sample was immediately placed into a sample container using clean stainless steel spoons. The remaining soil was homogenized prior to placement in sample containers.

A grab sample of the tar-like material exuding from the subsurface was collected using clean stainless steel spoons to transfer the material directly into a sample container.

Field decontamination of the stainless bucket augers was performed using a non-phosphate detergent solution with brushes, followed by a tap water rinse, a 10% nitric acid rinse, a deionized water rinse, a methanol rinse, a hexane rinse, and a final deionized water rinse. Equipment was allowed to air dry on plastic before being utilized again.

Following is a listing of samples collected, by sample number, indicating the location, date, and time collected.

Sample#	Description and Location of Sample	Date & Time Collected
94-1705	Soil grab (0-1 ft depth) from area 7 ft north of the concrete pad and 5 ft east of the east edge of asphalt play area.	7/7/94 @ 10:20
94-1706	Soil grab (0-1 ft depth) from area 7 ft north of the concrete pad and 5 ft east of the east edge of asphalt play area (duplicate).	7/7/94 @ 10:20
94-1707	Soil grab (0-1.5 ft depth) from area 35 ft north of the northwest fence post surrounding the asphalt play area.	7/7/94 @ 11:15
94-1708	Soil grab (0-2 ft depth) from area 9 ft west of the west edge of asphalt play area and the approximate midway point of the asphalt area's north-south line.	7/7/94 @ 12:45

Sample#	Description and Location of Sample	Date & Time Collected
94-1709	Soil grab (0-1 ft depth) from area 10 ft west and 35 ft south of the southeast corner of the building bordering the grass play area's north side.	7/7/94 @ 13:20
94-1710	Soil grab (0-1 ft depth) from area 20 ft north of the northeast corner of the school gym (background).	7/7/94 @ 13:40
94-1711	Grab of black tar-like material collected from the ground surface where it oozes from the sub-surface.	7/7/94 @ 14:18

Please refer to Appendix A for a map of the site indicating sampling locations.

Field personnel wore clean disposable latex gloves for each sample collected. All samples received a numbered tag and were placed on ice in a cooler. The corresponding tag number was entered onto a chain-of-custody form indicating the location, date and time of collection, and parameters to be analyzed. Custody of the samples was maintained by ESP field personnel until relinquishing them to laboratory personnel within the Environmental Services Program in Jefferson City for analyses. All samples were submitted for volatile organics, base neutrals and acid extractables, and total metals (As, Ba, Cd, Cr, Hg, Pb, Se, Ag) analyses. All analyses were conducted in accordance with the Fiscal Year 1994 Quality Assurance Project Plan for PA/SI sites in Missouri.

OBSERVATIONS

The weather during sampling was sunny and humid, and temperatures reached 95+ degrees at midday. Winds were from the south at 5-10 miles per hour.

ESP personnel attempted to auger to a depth of two feet, but the nature of the soil (rocks and brick debris) inhibited the collector from achieving two feet in several areas.

Over time, the tar-like material has migrated across the asphalt play area in several narrow paths. The apparent origin of the seep covers about 10 square feet and is located where the concrete pad abuts the asphalt play area.

Following is a breakdown of observations noted on each sample,

Sample #	Observations and Sample Descriptions:
94-1705	Soil grab (0-1 ft depth) consisted of brown top soil interspersed with small gravel and brick debris. No odor was noted.
94-1706	Duplicate sample of 94-1705, same description as above.
94-1707	Soil grab (0-1.5 ft depth) consisted of brown top soil with small gravel and a slight amount of yellow clay interspersed. No odor was noted. This sample was collected in an area where Geotechnology had reported an anomaly during a magnetometer survey conducted two weeks previously.
94-1708	Soil grab (0-2 ft depth) consisted of brown top soil interspersed with a slight amount of small gravel and pliable brown clay. No odor was noted. This sample appeared to be collected in the same area as a soil boring was conducted during a previous investigation. There was evidence soil here had been disturbed in the past.
94-1709	Soil grab (0-1 ft depth) consisted of brown top soil interspersed with small gravel and yellowish-brown clay. No odor was noted.
94-1710	Soil grab (0-1 ft depth) consisted of brown top soil interspersed with small gravel, brick debris, and yellow-brown clay. No odor was noted.
94-1711	Grab of material exuding from the sub-surface was black and tar-like. The material had a petroleum odor and was semi-solid rubber-like consistency.

DATA REPORTING

Please refer to Appendix B for analytical results of samples collected.

Submitted by:

Brian J. Allen
Environmental Specialist
Superfund Unit
Environmental Services Program

Date: 8/23/94

Approved by:

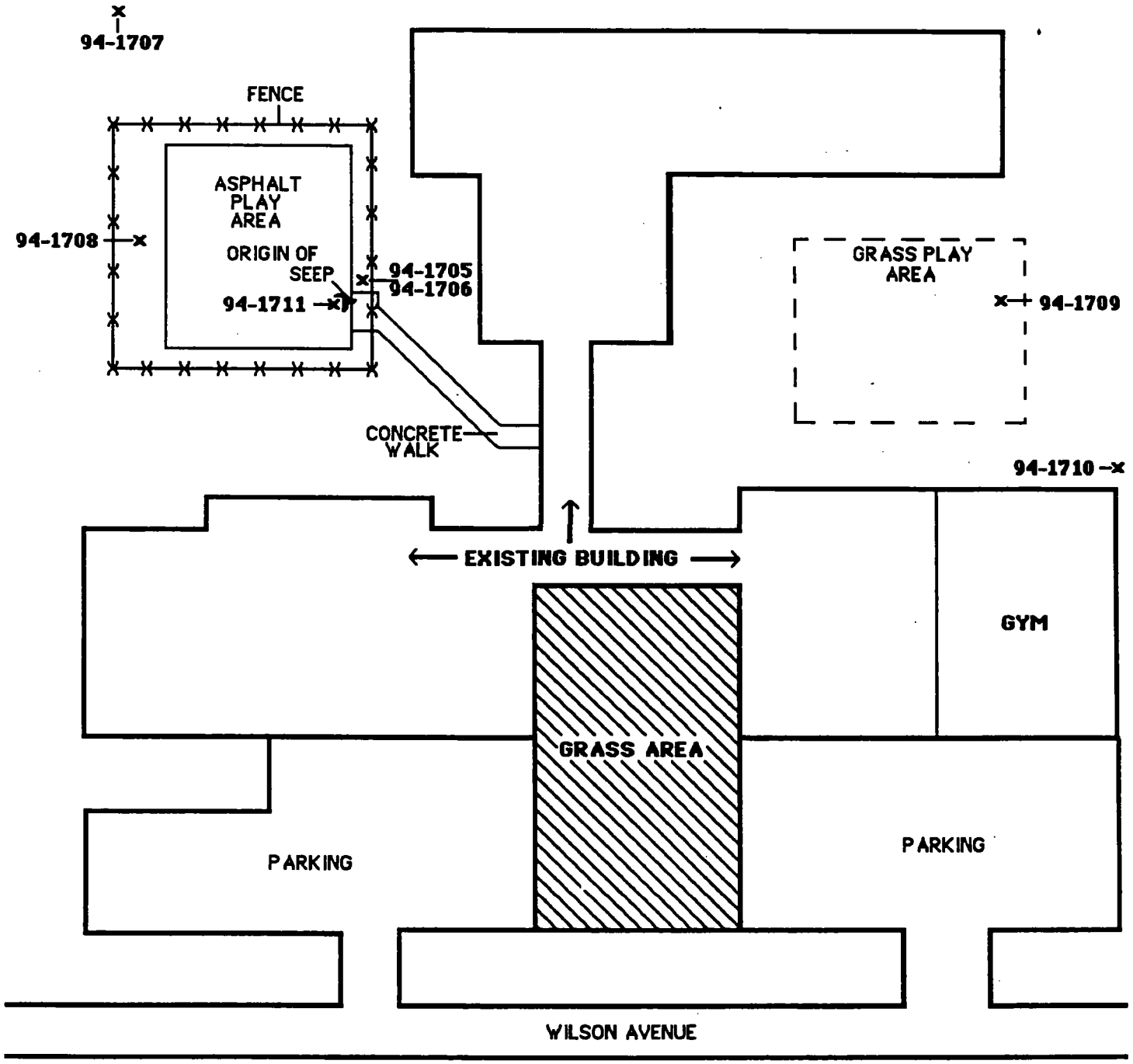
James H. Long
Director
Environmental Services Program

JHL:bad

c: Julie Bloss, Environmental Specialist, HWP
Bob Eck, Regional Director, SLRO

APPENDIX A
Site Map
Hubert Wheeler State School Site

APPENDIX A
SITE MAP
HUBERT WHEELER STATE SCHOOL



LEGEND:

x	SAMPLE COLLECTION POINT
94-XXXX	SAMPLE COLLECTED AT LOCATION INDICATED

N

NOT TO SCALE

APPENDIX B
Analytical Results
Hubert Wheeler State School Site

ENVIRONMENTAL SERVICES PROGRAM
RESULT OF SAMPLE ANALYSIS

Sample No. 94-1705

Reported to: BRIAN ALLEN
Affiliation: SPFD

Date: 8/23/94
Project Code: 3658/3538

Sample Description:
HUBERT WHEELER STATE SCHOOL, ST. LOUIS CITY
SOIL GRAB (0-1' DEPTH) FROM AREA 7' NORTH OF
CONCRETE PAD & 5' EAST OF EASTERN ASPHALT EDGE

Collected by: BRIAN ALLEN
Affiliation: SPFD
Remarks: ADD TCLP

Date: 07/07/94

PARAMETERS	RESULTS
TOTAL SILVER	<2500 ug/Kg
TOTAL ARSENIC	11,000 ug/Kg
TOTAL BARIUM	77,800 ug/Kg
TOTAL CADMIUM	1220 ug/Kg
TOTAL CHROMIUM	12,200 ug/Kg
TOTAL MERCURY	123 ug/Kg
TOTAL LEAD	65,700 ug/Kg
TOTAL SELENIUM	586 ug/Kg
VOA RESULT	
Chloromethane	< 25 ug/Kg

PARAMETERS	RESULTS
Vinyl Chloride	< 25 ug/Kg
Bromomethane	< 25 ug/Kg
Chloroethane	< 25 ug/Kg
1,1-Dichloroethene	< 25 ug/Kg
Acetone	<100 ug/Kg
Carbon Disulfide	< 25 ug/Kg
Methylene Chloride	< 25 ug/Kg
Methyl-tertiary-butyl Ether	< 25 ug/Kg
trans-1,2-Dichloroethene	< 25 ug/Kg
1,1-Dichloroethane	< 25 ug/Kg
2-Butanone	<100 ug/Kg
cis-1,2-Dichloroethene	< 25 ug/Kg
Chloroform	< 25 ug/Kg
1,1,1-Trichloroethane	< 25 ug/Kg
Carbon Tetrachloride	< 25 ug/Kg
Benzene	< 25 ug/Kg
1,2-Dichloroethane	< 25 ug/Kg
Trichloroethene	< 25 ug/Kg
1,2-Dichloropropane	< 25 ug/Kg
Bromodichloromethane	< 25 ug/Kg
2-Hexanone	<100 ug/Kg
trans-1,3-Dichloropropene	< 25 ug/Kg
Toluene	< 25 ug/Kg
cis-1,3-Dichloropropene	< 25 ug/Kg
1,1,2-Trichloroethane	< 25 ug/Kg
4-Methyl-2-Pentanone	<100 ug/Kg
Tetrachloroethene	< 25 ug/Kg
Dibromochloromethane	< 25 ug/Kg
Chlorobenzene	< 25 ug/Kg
Ethylbenzene	< 25 ug/Kg

PARAMETERS	RESULTS
Total Xylenes	< 25 ug/Kg
Styrene	< 25 ug/Kg
Bromoform	< 25 ug/Kg
1,1,2,2-Tetrachloroethane	< 25 ug/Kg
1,3-Dichlorobenzene	< 25 ug/Kg
1,4-Dichlorobenzene	< 25 ug/Kg
1,2-Dichlorobenzene	< 25 ug/Kg

COMMENTS: Analyzed by GC/MS at the Missouri DNR Environmental Services Program laboratory.

ACID EXTRACTABLES

Phenol	<	2.5	mg/Kg
2-Chlorophenol	<	2.5	mg/Kg
2-Methylphenol	<	2.5	mg/Kg
4-Methylphenol	<	2.5	mg/Kg
2-Nitrophenol	<	2.5	mg/Kg
2,4-Dimethylphenol	<	2.5	mg/Kg
2,4-Dichlorophenol	<	2.5	mg/Kg
4-Chloro-3-methylphenol	<	2.5	mg/Kg
2,4,6-Trichlorophenol	<	2.5	mg/Kg
2,4,5-Trichlorophenol	<	7.5	mg/Kg
2,4-Dinitrophenol	<	7.5	mg/Kg
4-Nitrophenol	<	7.5	mg/Kg
2-Methyl-4,6-dinitrophenol	<	7.5	mg/Kg
Pentachlorophenol	<	7.5	mg/Kg

COMMENTS: Analyzed by GC/MS at Missouri Department of Natural Resources' Laboratory.
(1) Elevated quantitation limits due to matrix interferences.

Sample no. 94-1705
Date 8/23/94

PARAMETERS	RESULTS
BASE NEUTRAL EXTRACTABLES	
Acenaphthene	< 2.5 mg/Kg
Acenaphthylene	< 2.5 mg/Kg
Anthracene	< 2.5 mg/Kg
Benzo(a)anthracene	2.7 mg/Kg
Benzo(a)pyrene	< 2.5 mg/Kg
Benzo(b)fluoranthene	< 2.5 mg/Kg
Benzo(ghi)perylene	< 2.5 mg/Kg
Benzoic acid	Not Analyzed
Benzo(k)fluoranthene	< 2.5 mg/Kg
Benzyl alcohol	< 2.5 mg/Kg
Bis(2-chloroethoxy)methane	< 2.5 mg/Kg
Bis(2-chloroethyl)ether	< 2.5 mg/Kg
Bis(2-chloroisopropyl)ether	< 2.5 mg/Kg
Bis(2-ethylhexyl)phthalate	Not Analyzed
4-Bromophenyl phenyl ether	< 2.5 mg/Kg
Butyl benzyl phthalate	< 2.5 mg/Kg
4-Chloroaniline	< 7.5 mg/Kg
2-Chloronaphthalene	< 2.5 mg/Kg
4-Chlorophenyl phenyl ether	< 2.5 mg/Kg
Chrysene	4.4 mg/Kg
Dibenzo(a,h)anthracene	< 2.5 mg/Kg
Dibenzofuran	< 2.5 mg/Kg
1,2-Dichlorobenzene	< 2.5 mg/Kg
1,3-Dichlorobenzene	< 2.5 mg/Kg
1,4-Dichlorobenzene	< 2.5 mg/Kg
3,3-Dichlorobenzidine	< 7.5 mg/Kg
Diethylphthalate	< 2.5 mg/Kg
Dimethylphthalate	< 2.5 mg/Kg
Di-N-Butylphthalate	Not Analyzed

PARAMETERS	RESULTS
2,4-Dinitrotoluene	< 2.5 mg/Kg
2,6-Dinitrotoluene	< 2.5 mg/Kg
Di-n-octyl phthalate	< 2.5 mg/Kg
Fluoranthene	6.9 mg/Kg
Fluorene	< 2.5 mg/Kg
Hexachlorobenzene	< 2.5 mg/Kg
Hexachlorobutadiene	< 2.5 mg/Kg
Hexachlorocyclopentadiene	< 7.5 mg/Kg
Hexachloroethane	< 2.5 mg/Kg
Indeno(1,2,3-cd)pyrene	< 2.5 mg/Kg
Isophorone	< 2.5 mg/Kg
2-Methylnaphthalene	< 2.5 mg/Kg
Naphthalene	< 2.5 mg/Kg
2-Nitroaniline	< 7.5 mg/Kg
3-Nitroaniline	< 7.5 mg/Kg
4-Nitroaniline	< 7.5 mg/Kg
Nitrobenzene	< 2.5 mg/Kg
N-Nitrosodi-n-propylamine	< 2.5 mg/Kg
N-Nitrosodiphenylamine	< 2.5 mg/Kg
Phenanthrene	4.7 mg/Kg
Pyrene	7.0 mg/Kg
1,2,4-Trichlorobenzene	< 2.5 mg/Kg

COMMENTS: Analyzed by GC/MS at Missouri Department of Natural Resources' Laboratory.

(1) Elevated quantitation limits due to matrix interferences.

ENVIRONMENTAL SERVICES PROGRAM
RESULT OF SAMPLE ANALYSIS

Sample No. 94-1706

Reported to: BRIAN ALLEN
Affiliation: SPFD

Date: 8/23/94
Project Code: 3658/3538

Sample Description:
HUBERT WHEELER STATE SCHOOL, ST. LOUIS CITY
SOIL GRAB (0-1' DEPTH) FROM AREA 7' NORTH OF
CONCRETE PAD & 5' EAST OF EASTERN ASPHALT EDGE, DUPLICATE

Collected by: BRIAN ALLEN
Affiliation: SPFD
Remarks: ADD TCLP

Date: 07/07/94

PARAMETERS	RESULTS
TOTAL SILVER	<2500 ug/Kg
TOTAL ARSENIC	1100 ug/Kg
TOTAL BARIUM	70,000 ug/Kg
TOTAL CADMIUM	545 ug/Kg
TOTAL CHROMIUM	10,700 ug/Kg
TOTAL MERCURY	149 ug/Kg
TOTAL LEAD	54,500 ug/Kg
TOTAL SELENIUM	<500 ug/Kg
VOA RESULT	
Chloromethane	< 25 ug/Kg

Sample no. 94-1706
Date 8/23/94

PARAMETERS	RESULTS
Vinyl Chloride	< 25 ug/Kg
Bromomethane	< 25 ug/Kg
Chloroethane	< 25 ug/Kg
1,1-Dichloroethene	< 25 ug/Kg
Acetone	<100 ug/Kg
Carbon Disulfide	< 25 ug/Kg
Methylene Chloride	< 25 ug/Kg
Methyl-tertiary-butyl Ether	< 25 ug/Kg
trans-1,2-Dichloroethene	< 25 ug/Kg
1,1-Dichloroethane	< 25 ug/Kg
2-Butanone	<100 ug/Kg
cis-1,2-Dichloroethene	< 25 ug/Kg
Chloroform	< 25 ug/Kg
1,1,1-Trichloroethane	< 25 ug/Kg
Carbon Tetrachloride	< 25 ug/Kg
Benzene	< 25 ug/Kg
1,2-Dichloroethane	< 25 ug/Kg
Trichloroethene	< 25 ug/Kg
1,2-Dichloropropane	< 25 ug/Kg
Bromodichloromethane	< 25 ug/Kg
2-Hexanone	<100 ug/Kg
trans-1,3-Dichloropropene	< 25 ug/Kg
Toluene	< 25 ug/Kg
cis-1,3-Dichloropropene	< 25 ug/Kg
1,1,2-Trichloroethane	< 25 ug/Kg
4-Methyl-2-Pentanone	<100 ug/Kg
Tetrachloroethene	< 25 ug/Kg
Dibromochloromethane	< 25 ug/Kg
Chlorobenzene	< 25 ug/Kg
Ethylbenzene	< 25 ug/Kg

PARAMETERS	RESULTS
Total Xylenes	< 25 ug/Kg
Styrene	< 25 ug/Kg
Bromoform	< 25 ug/Kg
1,1,2,2-Tetrachloroethane	< 25 ug/Kg
1,3-Dichlorobenzene	< 25 ug/Kg
1,4-Dichlorobenzene	< 25 ug/Kg
1,2-Dichlorobenzene	< 25 ug/Kg

COMMENTS: Analyzed by GC/MS at the Missouri DNR Environmental Services Program laboratory.

ACID EXTRACTABLES

Phenol	<	0.25	mg/Kg
2-Chlorophenol	<	0.25	mg/Kg
2-Methylphenol	<	0.25	mg/Kg
4-Methylphenol	<	0.25	mg/Kg
2-Nitrophenol	<	0.25	mg/Kg
2,4-Dimethylphenol	<	0.25	mg/Kg
2,4-Dichlorophenol	<	0.25	mg/Kg
4-Chloro-3-methylphenol	<	0.25	mg/Kg
2,4,6-Trichlorophenol	<	0.25	mg/Kg
2,4,5-Trichlorophenol	<	1.25	mg/Kg
2,4-Dinitrophenol	<	1.25	mg/Kg
4-Nitrophenol	<	1.25	mg/Kg
2-Methyl-4,6-dinitrophenol	<	1.25	mg/Kg
Pentachlorophenol	<	1.25	mg/Kg

COMMENTS: Analyzed by GC/MS at Missouri Department of Natural Resources' Laboratory.

BASE NEUTRAL EXTRACTABLES

Acenaphthene	0.43 mg/Kg

PARAMETERS	RESULTS
Acenaphthylene	< 0.25 mg/Kg
Anthracene	1.5 mg/Kg
Benzo(a)anthracene	3.5 mg/Kg
Benzo(a)pyrene	< 0.25 mg/Kg
Benzo(b)fluoranthene	3.0 mg/Kg
Benzo(ghi)perylene	< 0.25 mg/Kg
Benzoic acid	Not Analyzed
Benzo(k)fluoranthene	4.8 mg/Kg
Benzyl alcohol	< 0.25 mg/Kg
Bis(2-chloroethoxy)methane	< 0.25 mg/Kg
Bis(2-chloroethyl)ether	< 0.25 mg/Kg
Bis(2-chloroisopropyl)ether	< 0.25 mg/Kg
Bis(2-ethylhexyl)phthalate	Not Analyzed
4-Bromophenyl phenyl ether	< 0.25 mg/Kg
Butyl benzyl phthalate	< 0.25 mg/Kg
4-Chloroaniline	< 1.25 mg/Kg
2-Chloronaphthalene	< 0.25 mg/Kg
4-Chlorophenyl phenyl ether	< 0.25 mg/Kg
Chrysene	4.0 mg/Kg
Dibenzo(a,h)anthracene	< 0.25 mg/Kg
Dibenzofuran	< 0.25 mg/Kg
1,2-Dichlorobenzene	< 0.25 mg/Kg
1,3-Dichlorobenzene	< 0.25 mg/Kg
1,4-Dichlorobenzene	< 0.25 mg/Kg
3,3-Dichlorobenzidine	< 1.25 mg/Kg
Diethylphthalate	0.26 mg/Kg
Dimethylphthalate	< 0.25 mg/Kg
Di-N-Butylphthalate	Not Analyzed
2,4-Dinitrotoluene	< 0.25 mg/Kg
2,6-Dinitrotoluene	< 0.25 mg/Kg

PARAMETERS	RESULTS
Di-n-octyl phthalate	< 0.25 mg/Kg
Fluoranthene	9.3 mg/Kg
Fluorene	0.43 mg/Kg
Hexachlorobenzene	< 0.25 mg/Kg
Hexachlorobutadiene	< 0.25 mg/Kg
Hexachlorocyclopentadiene	< 1.25 mg/Kg
Hexachloroethane	< 0.25 mg/Kg
Indeno(1,2,3-cd)pyrene	1.4 mg/Kg
Isophorone	< 0.25 mg/Kg
2-Methylnaphthalene	< 0.25 mg/Kg
Naphthalene	< 0.25 mg/Kg
2-Nitroaniline	< 1.25 mg/Kg
3-Nitroaniline	< 1.25 mg/Kg
4-Nitroaniline	< 1.25 mg/Kg
Nitrobenzene	< 0.25 mg/Kg
N-Nitrosodi-n-propylamine	< 0.25 mg/Kg
N-Nitrosodiphenylamine	< 0.25 mg/Kg
Phenanthrene	4.8 mg/Kg
Pyrene	7.4 mg/Kg
1,2,4-Trichlorobenzene	< 0.25 mg/Kg

COMMENTS: Analyzed by GC/MS at Missouri Department of Natural Resources' Laboratory.

ENVIRONMENTAL SERVICES PROGRAM
RESULT OF SAMPLE ANALYSIS

Sample No. 94-1707

Reported to: BRIAN ALLEN
Affiliation: SPFD

Date: 8/23/94
Project Code: 3658/3538

Sample Description:
HUBERT WHEELER STATE SCHOOL, ST. LOUIS CITY
SOIL GRAB (0-18" DEPTH) FROM AREA 35' NORTH
OF NW FENCE POST SURROUNDING ASPHALT PLAY AREA

Collected by: BRIAN ALLEN
Affiliation: SPFD
Remarks: ADD TCLP

Date: 07/07/94

PARAMETERS	RESULTS
TOTAL SILVER	<2500 ug/Kg
TOTAL ARSENIC	5190 ug/Kg
TOTAL BARIUM	108,000 ug/Kg
TOTAL CADMIUM	1240 ug/Kg
TOTAL CHROMIUM	15,800 ug/Kg
TOTAL MERCURY	<25 ug/Kg
TOTAL LEAD	60,000 ug/Kg
TOTAL SELENIUM	<500 ug/Kg
VOA RESULT	
Chloromethane	< 25 ug/Kg

PARAMETERS	RESULTS
Vinyl Chloride	< 25 ug/Kg
Bromomethane	< 25 ug/Kg
Chloroethane	< 25 ug/Kg
1,1-Dichloroethene	< 25 ug/Kg
Acetone	<100 ug/Kg
Carbon Disulfide	< 25 ug/Kg
Methylene Chloride	< 25 ug/Kg
Methyl-tertiary-butyl Ether	< 25 ug/Kg
trans-1,2-Dichloroethene	< 25 ug/Kg
1,1-Dichloroethane	< 25 ug/Kg
2-Butanone	<100 ug/Kg
cis-1,2-Dichloroethene	< 25 ug/Kg
Chloroform	< 25 ug/Kg
1,1,1-Trichloroethane	< 25 ug/Kg
Carbon Tetrachloride	< 25 ug/Kg
Benzene	< 25 ug/Kg
1,2-Dichloroethane	< 25 ug/Kg
Trichloroethene	< 25 ug/Kg
1,2-Dichloropropane	< 25 ug/Kg
Bromodichloromethane	< 25 ug/Kg
2-Hexanone	<100 ug/Kg
trans-1,3-Dichloropropene	< 25 ug/Kg
Toluene	< 25 ug/Kg
cis-1,3-Dichloropropene	< 25 ug/Kg
1,1,2-Trichloroethane	< 25 ug/Kg
4-Methyl-2-Pentanone	<100 ug/Kg
Tetrachloroethene	< 25 ug/Kg
Dibromochloromethane	< 25 ug/Kg
Chlorobenzene	< 25 ug/Kg
Ethylbenzene	< 25 ug/Kg

PARAMETERS	RESULTS
Total Xylenes	< 25 ug/Kg
Styrene	< 25 ug/Kg
Bromoform	< 25 ug/Kg
1,1,2,2-Tetrachloroethane	< 25 ug/Kg
1,3-Dichlorobenzene	< 25 ug/Kg
1,4-Dichlorobenzene	< 25 ug/Kg
1,2-Dichlorobenzene	< 25 ug/Kg

COMMENTS: Analyzed by GC/MS at the Missouri DNR Environmental Services Program laboratory.

ACID EXTRACTABLES

Phenol	<	0.20	mg/Kg
2-Chlorophenol	<	0.20	mg/Kg
2-Methylphenol	<	0.20	mg/Kg
4-Methylphenol	<	0.20	mg/Kg
2-Nitrophenol	<	0.20	mg/Kg
2,4-Dimethylphenol	<	0.20	mg/Kg
2,4-Dichlorophenol	<	0.20	mg/Kg
4-Chloro-3-methylphenol	<	0.20	mg/Kg
2,4,6-Trichlorophenol	<	0.20	mg/Kg
2,4,5-Trichlorophenol	<	1.00	mg/Kg
2,4-Dinitrophenol	<	1.00	mg/Kg
4-Nitrophenol	<	1.00	mg/Kg
2-Methyl-4,6-dinitrophenol	<	1.00	mg/Kg
Pentachlorophenol	<	1.00	mg/Kg

COMMENTS: Analyzed by GC/MS at Missouri Department of Natural Resources' Laboratory.

BASE NEUTRAL EXTRACTABLES

Acenaphthene	<	0.20	mg/Kg

Sample no. 94-1707
Date 8/23/94

PARAMETERS	RESULTS
Acenaphthylene	< 0.20 mg/Kg
Anthracene	0.22 mg/Kg
Benzo(a)anthracene	0.55 mg/Kg
Benzo(a)pyrene	< 0.20 mg/Kg
Benzo(b)fluoranthene	0.42 mg/Kg
Benzo(ghi)perylene	< 0.20 mg/Kg
Benzoic acid	Not Analyzed
Benzo(k)fluoranthene	0.83 mg/Kg
Benzyl alcohol	< 0.20 mg/Kg
Bis(2-chloroethoxy)methane	< 0.20 mg/Kg
Bis(2-chloroethyl)ether	< 0.20 mg/Kg
Bis(2-chloroisopropyl)ether	< 0.20 mg/Kg
Bis(2-ethylhexyl)phthalate	Not Analyzed
4-Bromophenyl phenyl ether	< 0.20 mg/Kg
Butyl benzyl phthalate	< 0.20 mg/Kg
4-Chloroaniline	< 1.00 mg/Kg
2-Chloronaphthalene	< 0.20 mg/Kg
4-Chlorophenyl phenyl ether	< 0.20 mg/Kg
Chrysene	0.76 mg/Kg
Dibenzo(a,h)anthracene	< 0.20 mg/Kg
Dibenzofuran	< 0.20 mg/Kg
1,2-Dichlorobenzene	< 0.20 mg/Kg
1,3-Dichlorobenzene	< 0.20 mg/Kg
1,4-Dichlorobenzene	< 0.20 mg/Kg
3,3-Dichlorobenzidine	< 1.00 mg/Kg
Diethylphthalate	< 0.20 mg/Kg
Dimethylphthalate	< 0.20 mg/Kg
Di-N-Butylphthalate	Not Analyzed
2,4-Dinitrotoluene	< 0.20 mg/Kg
2,6-Dinitrotoluene	< 0.20 mg/Kg

PARAMETERS	RESULTS
Di-n-octyl phthalate	< 0.20 mg/Kg
Fluoranthene	1.4 mg/Kg
Fluorene	< 0.20 mg/Kg
Hexachlorobenzene	< 0.20 mg/Kg
Hexachlorobutadiene	< 0.20 mg/Kg
Hexachlorocyclopentadiene	< 1.00 mg/Kg
Hexachloroethane	< 0.20 mg/Kg
Indeno(1,2,3-cd)pyrene	< 0.20 mg/Kg
Isophorone	< 0.20 mg/Kg
2-Methylnaphthalene	< 0.20 mg/Kg
Naphthalene	< 0.20 mg/Kg
2-Nitroaniline	< 1.00 mg/Kg
3-Nitroaniline	< 1.00 mg/Kg
4-Nitroaniline	< 1.00 mg/Kg
Nitrobenzene	< 0.20 mg/Kg
N-Nitrosodi-n-propylamine	< 0.20 mg/Kg
N-Nitrosodiphenylamine	< 0.20 mg/Kg
Phenanthrene	0.67 mg/Kg
Pyrene	1.2 mg/Kg
1,2,4-Trichlorobenzene	< 0.20 mg/Kg

COMMENTS: Analyzed by GC/MS at Missouri Department of Natural Resources' Laboratory.

ENVIRONMENTAL SERVICES PROGRAM
RESULT OF SAMPLE ANALYSIS

Sample No. 94-1708

Reported to: BRIAN ALLEN
Affiliation: SPFD

Date: 8/23/94
Project Code: 3658/3538

Sample Description:
HUBERT WHEELER STATE SCHOOL, ST. LOUIS CITY, SOIL GRAB (0-2' DEPTH) FROM AREA 9' WEST OF WESTERN ASPHALT EDGE & APPROX. MIDWAY POINT OF ASPHALTED AREA'S NORTH-SOUTH LINE

Collected by: BRIAN ALLEN
Affiliation: SPFD
Remarks: ADD TCLP

Date: 07/07/94

PARAMETERS	RESULTS
TOTAL SILVER	<2500 ug/Kg
TOTAL ARSENIC	10,100 ug/Kg
TOTAL BARIUM	125,000 ug/Kg
TOTAL CADMIUM	1440 ug/Kg
TOTAL CHROMIUM	19,100 ug/Kg
TOTAL MERCURY	41 ug/Kg
TOTAL LEAD	92,800 ug/Kg
TOTAL SELENIUM	<500 ug/Kg
VOA RESULT	
Chloromethane	< 25 ug/Kg

PARAMETERS	RESULTS
Vinyl Chloride	< 25 ug/Kg
Bromomethane	< 25 ug/Kg
Chloroethane	< 25 ug/Kg
1,1-Dichloroethene	< 25 ug/Kg
Acetone	<100 ug/Kg
Carbon Disulfide	< 25 ug/Kg
Methylene Chloride	< 25 ug/Kg
Methyl-tertiary-butyl Ether	< 25 ug/Kg
trans-1,2-Dichloroethene	< 25 ug/Kg
1,1-Dichloroethane	< 25 ug/Kg
2-Butanone	<100 ug/Kg
cis-1,2-Dichloroethene	< 25 ug/Kg
Chloroform	< 25 ug/Kg
1,1,1-Trichloroethane	< 25 ug/Kg
Carbon Tetrachloride	< 25 ug/Kg
Benzene	< 25 ug/Kg
1,2-Dichloroethane	< 25 ug/Kg
Trichloroethene	< 25 ug/Kg
1,2-Dichloropropane	< 25 ug/Kg
Bromodichloromethane	< 25 ug/Kg
2-Hexanone	<100 ug/Kg
trans-1,3-Dichloropropene	< 25 ug/Kg
Toluene	< 25 ug/Kg
cis-1,3-Dichloropropene	< 25 ug/Kg
1,1,2-Trichloroethane	< 25 ug/Kg
4-Methyl-2-Pentanone	<100 ug/Kg
Tetrachloroethene	< 25 ug/Kg
Dibromochloromethane	< 25 ug/Kg
Chlorobenzene	< 25 ug/Kg
Ethylbenzene	< 25 ug/Kg

PARAMETERS	RESULTS
Total Xylenes	< 25 ug/Kg
Styrene	< 25 ug/Kg
Bromoform	< 25 ug/Kg
1,1,2,2-Tetrachloroethane	< 25 ug/Kg
1,3-Dichlorobenzene	< 25 ug/Kg
1,4-Dichlorobenzene	< 25 ug/Kg
1,2-Dichlorobenzene	< 25 ug/Kg

COMMENTS: Analyzed by GC/MS at the Missouri DNR Environmental Services Program laboratory.

ACID EXTRACTABLES

Phenol	< 0.13	mg/Kg
2-Chlorophenol	< 0.13	mg/Kg
2-Methylphenol	< 0.13	mg/Kg
4-Methylphenol	< 0.13	mg/Kg
2-Nitrophenol	< 0.13	mg/Kg
2,4-Dimethylphenol	< 0.13	mg/Kg
2,4-Dichlorophenol	< 0.13	mg/Kg
4-Chloro-3-methylphenol	< 0.13	mg/Kg
2,4,6-Trichlorophenol	< 0.13	mg/Kg
2,4,5-Trichlorophenol	< 0.33	mg/Kg
2,4-Dinitrophenol	< 0.33	mg/Kg
4-Nitrophenol	< 0.33	mg/Kg
2-Methyl-4,6-dinitrophenol	< 0.33	mg/Kg
Pentachlorophenol	< 0.33	mg/Kg

COMMENTS: Analyzed by GC/MS at Missouri Department of Natural Resources Laboratory.

BASE NEUTRAL EXTRACTABLES

Acenaphthene	0.31	mg/Kg

PARAMETERS	RESULTS
Acenaphthylene	< 0.13 mg/Kg
Anthracene	0.71 mg/Kg
Benzo(a)anthracene	1.10 mg/Kg
Benzo(a)pyrene	2.00 mg/Kg
Benzo(b)fluoranthene	1.30 mg/Kg
Benzo(ghi)perylene	1.00 mg/Kg
Benzoic acid	Not Analyzed
Benzo(k)fluoranthene	1.40 mg/Kg
Benzyl alcohol	< 0.13 mg/Kg
Bis(2-chloroethoxy)methane	< 0.13 mg/Kg
Bis(2-chloroethyl)ether	< 0.13 mg/Kg
Bis(2-chloroisopropyl)ether	< 0.13 mg/Kg
Bis(2-ethylhexyl)phthalate	Not Analyzed
4-Bromophenyl phenyl ether	< 0.13 mg/Kg
Butyl benzyl phthalate	< 0.13 mg/Kg
4-Chloroaniline	< 0.33 mg/Kg
2-Chloronaphthalene	< 0.13 mg/Kg
4-Chlorophenyl phenyl ether	< 0.13 mg/Kg
Chrysene	1.30 mg/Kg
Dibenzo(a,h)anthracene	0.47 ug/Kg
Dibenzofuran	< 0.13 mg/Kg
1,2-Dichlorobenzene	< 0.13 mg/Kg
1,3-Dichlorobenzene	< 0.13 mg/Kg
1,4-Dichlorobenzene	< 0.13 mg/Kg
3,3-Dichlorobenzidine	< 0.33 mg/Kg
Diethylphthalate	Not Analyzed
Dimethylphthalate	< 0.13 mg/Kg
Di-N-Butylphthalate	Not Analyzed
2,4-Dinitrotoluene	< 0.13 mg/Kg
2,6-Dinitrotoluene	< 0.13 mg/Kg

PARAMETERS	RESULTS
Di-n-octyl phthalate	< 0.13 mg/Kg
Fluoranthene	4.00 mg/Kg
Fluorene	0.23 mg.Kg
Hexachlorobenzene	< 0.13 mg/Kg
Hexachlorobutadiene	< 0.13 mg/Kg
Hexachlorocyclopentadiene	< 0.33 mg/Kg
Hexachloroethane	< 0.13 mg/Kg
Indeno(1,2,3-cd)pyrene	1.40 mg/Kg
Isophorone	< 0.13 mg/Kg
2-Methylnaphthalene	< 0.13 mg/Kg
Naphthalene	< 0.13 mg/Kg
2-Nitroaniline	< 0.33 mg/Kg
3-Nitroaniline	< 0.33 mg/Kg
4-Nitroaniline	< 0.33 mg/Kg
Nitrobenzene	< 0.13 mg/Kg
N-Nitrosodi-n-propylamine	< 0.13 mg/Kg
N-Nitrosodiphenylamine	< 0.13 mg/Kg
Phenanthrene	2.50 mg/Kg
Pyrene	3.20 mg/Kg
1,2,4-Trichlorobenzene	< 0.13 mg/Kg

COMMENTS: Analyzed by GC/MS at Missouri Department of Natural Resources Laboratory.

(2) The following compounds were detected below quantitation limits and their estimated concentrations are as follows:

(a) Naphthalene	0.050 mg/Kg
(b) Dibenzofuran	0.128 mg/Kg

ENVIRONMENTAL SERVICES PROGRAM
RESULT OF SAMPLE ANALYSIS

Sample No. 94-1709

Reported to: BRIAN ALLEN
Affiliation: SPFD

Date: 8/23/94
Project Code: 3658/3538

Sample Description:
HUBERT WHEELER STATE SCHOOL, ST. LOUIS CITY, SOIL GRAB (0-1' DEPTH) FROM AREA 10' WEST & 35' SOUTH OF SE CORNER OF BUILDING BORDERING THE GRASS PLAY AREA'S NORTH SIDE

Collected by: BRIAN ALLEN
Affiliation: SPFD
Remarks: ADD TCLP

Date: 07/07/94

PARAMETERS	RESULTS
TOTAL SILVER	<2500 ug/Kg
TOTAL ARSENIC	8680 ug/Kg
TOTAL BARIUM	96,200 ug/Kg
TOTAL CADMIUM	1050 ug/Kg
TOTAL CHROMIUM	17,600 ug/Kg
TOTAL MERCURY	49 ug/Kg
TOTAL LEAD	59,000 ug/Kg
TOTAL SELENIUM	530 ug/Kg
VOA RESULT	
Chloromethane	< 25 ug/Kg

Sample no. 94-1709
Date 8/23/94

PARAMETERS	RESULTS
Vinyl Chloride	< 25 ug/Kg
Bromomethane	< 25 ug/Kg
Chloroethane	< 25 ug/Kg
1,1-Dichloroethene	< 25 ug/Kg
Acetone	<100 ug/Kg
Carbon Disulfide	< 25 ug/Kg
Methylene Chloride	< 25 ug/Kg
Methyl-tertiary-butyl Ether	< 25 ug/Kg
trans-1,2-Dichloroethene	< 25 ug/Kg
1,1-Dichloroethane	< 25 ug/Kg
2-Butanone	<100 ug/Kg
cis-1,2-Dichloroethene	< 25 ug/Kg
Chloroform	< 25 ug/Kg
1,1,1-Trichloroethane	< 25 ug/Kg
Carbon Tetrachloride	< 25 ug/Kg
Benzene	< 25 ug/Kg
1,2-Dichloroethane	< 25 ug/Kg
Trichloroethene	< 25 ug/Kg
1,2-Dichloropropane	< 25 ug/Kg
Bromodichloromethane	< 25 ug/Kg
2-Hexanone	<100 ug/Kg
trans-1,3-Dichloropropene	< 25 ug/Kg
Toluene	< 25 ug/Kg
cis-1,3-Dichloropropene	< 25 ug/Kg
1,1,2-Trichloroethane	< 25 ug/Kg
4-Methyl-2-Pentanone	<100 ug/Kg
Tetrachloroethene	< 25 ug/Kg
Dibromochloromethane	< 25 ug/Kg
Chlorobenzene	< 25 ug/Kg
Ethylbenzene	< 25 ug/Kg

PARAMETERS	RESULTS
Total Xylenes	< 25 ug/Kg
Styrene	< 25 ug/Kg
Bromoform	< 25 ug/Kg
1,1,2,2-Tetrachloroethane	< 25 ug/Kg
1,3-Dichlorobenzene	< 25 ug/Kg
1,4-Dichlorobenzene	< 25 ug/Kg
1,2-Dichlorobenzene	< 25 ug/Kg

COMMENTS: Analyzed by GC/MS at the Missouri DNR Environmental Services Program laboratory.

ACID EXTRACTABLES

Phenol	< 0.50	mg/Kg
2-Chlorophenol	< 0.50	mg/Kg
2-Methylphenol	< 0.50	mg/Kg
4-Methylphenol	< 0.50	mg/Kg
2-Nitrophenol	< 0.50	mg/Kg
2,4-Dimethylphenol	< 0.50	mg/Kg
2,4-Dichlorophenol	< 0.50	mg/Kg
4-Chloro-3-methylphenol	< 0.50	mg/Kg
2,4,6-Trichlorophenol	< 0.50	mg/Kg
2,4,5-Trichlorophenol	< 1.25	mg/Kg
2,4-Dinitrophenol	< 1.25	mg/Kg
4-Nitrophenol	< 1.25	mg/Kg
2-Methyl-4,6-dinitrophenol	< 1.25	mg/Kg
Pentachlorophenol	< 1.25	mg/Kg

COMMENTS: Analyzed by GC/MS at Missouri Department of Natural Resources Laboratory.
(1) Elevated quantitation limits due to matrix interferences.

Sample no. 94-1709
Date 8/23/94

PARAMETERS	RESULTS
BASE NEUTRAL EXTRACTABLES	
Acenaphthene	< 0.50 mg/Kg
Acenaphthylene	< 0.50 mg/Kg
Anthracene	< 0.50 mg/Kg
Benzo(a)anthracene	< 0.50 mg/Kg
Benzo(a)pyrene	< 0.50 mg/Kg
Benzo(b)fluoranthene	< 0.50 mg/Kg
Benzo(ghi)perylene	< 0.50 mg/Kg
Benzoic acid	Not Analyzed
Benzo(k)fluoranthene	< 0.50 mg/Kg
Benzyl alcohol	< 0.50 mg/Kg
Bis(2-chloroethoxy)methane	< 0.50 mg/Kg
Bis(2-chloroethyl)ether	< 0.50 mg/Kg
Bis(2-chloroisopropyl)ether	< 0.50 mg/Kg
Bis(2-ethylhexyl)phthalate	Not Analyzed
4-Bromophenyl phenyl ether	< 0.50 mg/Kg
Butyl benzyl phthalate	< 0.50 mg/Kg
4-Chloroaniline	< 1.25 mg/Kg
2-Chloronaphthalene	< 0.50 mg/Kg
4-Chlorophenyl phenyl ether	< 0.50 mg/Kg
Chrysene	< 0.50 mg/Kg
Dibenzo(a,h)anthracene	< 0.50 mg/Kg
Dibenzofuran	< 0.50 mg/Kg
1,2-Dichlorobenzene	< 0.50 mg/Kg
1,3-Dichlorobenzene	< 0.50 mg/Kg
1,4-Dichlorobenzene	< 0.50 mg/Kg
3,3-Dichlorobenzidine	< 1.25 mg/Kg
Diethylphthalate	Not Analyzed
Dimethylphthalate	< 0.50 mg/Kg
Di-N-Butylphthalate	Not Analyzed

PARAMETERS	RESULTS
2,4-Dinitrotoluene	< 0.50 mg/Kg
2,6-Dinitrotoluene	< 0.50 mg/Kg
Di-n-octyl phthalate	< 0.50 mg/Kg
Fluoranthene	0.65 mg/Kg
Fluorene	< 0.50 mg/Kg
Hexachlorobenzene	< 0.50 mg/Kg
Hexachlorobutadiene	< 0.50 mg/Kg
Hexachlorocyclopentadiene	< 1.25 mg/Kg
Hexachloroethane	< 0.50 mg/Kg
Indeno(1,2,3-cd)pyrene	< 0.50 mg/Kg
Isophorone	< 0.50 mg/Kg
2-Methylnaphthalene	< 0.50 mg/Kg
Naphthalene	< 0.50 mg/Kg
2-Nitroaniline	< 1.25 mg/Kg
3-Nitroaniline	< 1.25 mg/Kg
4-Nitroaniline	< 1.25 mg/Kg
Nitrobenzene	< 0.50 mg/Kg
N-Nitrosodi-n-propylamine	< 0.50 mg/Kg
N-Nitrosodiphenylamine	< 0.50 mg/Kg
Phenanthrene	< 0.50 mg/Kg
Pyrene	0.50 mg/Kg
1,2,4-Trichlorobenzene	< 0.50 mg/Kg

COMMENTS: Analyzed by GC/MS at Missouri Department of Natural Resources' Laboratory.

(1) Elevated quantitation limits due to matrix interferences.

(2) The following compounds were detected below quantitation limits and their estimated concentrations are as follows:

(a) Benzo(a)anthracene 0.25 mg/Kg

PARAMETERS	RESULTS
(b) Chyrsene	0.36 mg/Kg
(c) Phenanthrene	0.32 mg/Kg

ENVIRONMENTAL SERVICES PROGRAM
RESULT OF SAMPLE ANALYSIS

Sample No. 94-1710

Reported to: BRIAN ALLEN
Affiliation: SPFD

Date: 8/23/94
Project Code:. 3658/3538

Sample Description:
HUBERT WHEELER STATE SCHOOL, ST. LOUIS CITY
SOIL GRAB (0-1' DEPTH) FROM AREA 20' NORTH OF
NE CORNER OF SCHOOL GYM BUILDING, (BACKGROUND)

Collected by: BRIAN ALLEN
Affiliation: SPFD
Remarks: ADD TCLP

Date: 07/07/94

PARAMETERS	RESULTS
TOTAL SILVER	<2500 ug/Kg
TOTAL ARSENIC	9930 ug/Kg
TOTAL BARIUM	111,000 ug/Kg
TOTAL CADMIUM	2020 ug/Kg
TOTAL CHROMIUM	20,900 ug/Kg
TOTAL MERCURY	86 ug/Kg
TOTAL LEAD	85,300 ug/Kg
TOTAL SELENIUM	2280 ug/Kg
VOA RESULT	
Chloromethane	< 25 ug/Kg

PARAMETERS	RESULTS
Vinyl Chloride	< 25 ug/Kg
Bromomethane	< 25 ug/Kg
Chloroethane	< 25 ug/Kg
1,1-Dichloroethene	< 25 ug/Kg
Acetone	<100 ug/Kg
Carbon Disulfide	< 25 ug/Kg
Methylene Chloride	< 25 ug/Kg
Methyl-tertiary-butyl Ether	< 25 ug/Kg
trans-1,2-Dichloroethene	< 25 ug/Kg
1,1-Dichloroethane	< 25 ug/Kg
2-Butanone	<100 ug/Kg
cis-1,2-Dichloroethene	< 25 ug/Kg
Chloroform	< 25 ug/Kg
1,1,1-Trichloroethane	< 25 ug/Kg
Carbon Tetrachloride	< 25 ug/Kg
Benzene	< 25 ug/Kg
1,2-Dichloroethane	< 25 ug/Kg
Trichloroethene	< 25 ug/Kg
1,2-Dichloropropane	< 25 ug/Kg
Bromodichloromethane	< 25 ug/Kg
2-Hexanone	<100 ug/Kg
trans-1,3-Dichloropropene	< 25 ug/Kg
Toluene	< 25 ug/Kg
cis-1,3-Dichloropropene	< 25 ug/Kg
1,1,2-Trichloroethane	< 25 ug/Kg
4-Methyl-2-Pentanone	<100 ug/Kg
Tetrachloroethene	< 25 ug/Kg
Dibromochloromethane	< 25 ug/Kg
Chlorobenzene	< 25 ug/Kg
Ethylbenzene	< 25 ug/Kg

PARAMETERS	RESULTS
Total Xylenes	< 25 ug/Kg
Styrene	< 25 ug/Kg
Bromoform	< 25 ug/Kg
1,1,2,2-Tetrachloroethane	< 25 ug/Kg
1,3-Dichlorobenzene	< 25 ug/Kg
1,4-Dichlorobenzene	< 25 ug/Kg
1,2-Dichlorobenzene	< 25 ug/Kg

COMMENTS: Analyzed by GC/MS at the Missouri DNR Environmental Services Program laboratory.

ACID EXTRACTABLES

Phenol	< 0.10	mg/Kg
2-Chlorophenol	< 0.10	mg/Kg
2-Methylphenol	< 0.10	mg/Kg
4-Methylphenol	< 0.10	mg/Kg
2-Nitrophenol	< 0.10	mg/Kg
2,4-Dimethylphenol	< 0.10	mg/Kg
2,4-Dichlorophenol	< 0.10	mg/Kg
4-Chloro-3-methylphenol	< 0.10	mg/Kg
2,4,6-Trichlorophenol	< 0.10	mg/Kg
2,4,5-Trichlorophenol	< 0.25	mg/Kg
2,4-Dinitrophenol	< 0.25	mg/Kg
4-Nitrophenol	< 0.25	mg/Kg
2-Methyl-4,6-dinitrophenol	< 0.25	mg/Kg
Pentachlorophenol	< 0.25	mg/Kg

COMMENTS: Analyzed by GC/MS at Missouri Department of Natural Resources Laboratory.

BASE NEUTRAL EXTRACTABLES

Acenaphthene	< 0.10	mg/Kg

PARAMETERS	RESULTS
Acenaphthylene	< 0.10 mg/Kg
Anthracene	0.13 mg/Kg
Benzo(a)anthracene	0.57 mg/Kg
Benzo(a)pyrene	0.56 mg/Kg
Benzo(b)fluoranthene	0.53 mg/Kg
Benzo(ghi)perylene	< 0.10 mg/Kg
Benzoic acid	Not Analyzed
Benzo(k)fluoranthene	0.83 mg/Kg
Benzyl alcohol	< 0.10 mg/Kg
Bis(2-chloroethoxy)methane	< 0.10 mg/Kg
Bis(2-chloroethyl)ether	< 0.10 mg/Kg
Bis(2-chloroisopropyl)ether	< 0.10 mg/Kg
Bis(2-ethylhexyl)phthalate	Not Analyzed
4-Bromophenyl phenyl ether	< 0.10 mg/Kg
Butyl benzyl phthalate	< 0.10 mg/Kg
4-Chloroaniline	< 0.25 mg/Kg
2-Chloronaphthalene	< 0.10 mg/Kg
4-Chlorophenyl phenyl ether	< 0.10 mg/Kg
Chrysene	0.66 mg/Kg
Dibenzo(a,h)anthracene	< 0.10 mg/Kg
Dibenzofuran	< 0.10 mg/Kg
1,2-Dichlorobenzene	< 0.10 mg/Kg
1,3-Dichlorobenzene	< 0.10 mg/Kg
1,4-Dichlorobenzene	< 0.10 mg/Kg
3,3-Dichlorobenzidine	< 0.25 mg/Kg
Diethylphthalate	Not Analyzed
Dimethylphthalate	< 0.10 mg/Kg
Di-N-Butylphthalate	Not Analyzed
2,4-Dinitrotoluene	< 0.10 mg/Kg
2,6-Dinitrotoluene	< 0.10 mg/Kg

PARAMETERS	RESULTS
Di-n-octyl phthalate	< 0.10 mg/Kg
Fluoranthene	1.20 mg/Kg
Fluorene	< 0.10 mg/Kg
Hexachlorobenzene	< 0.10 mg/Kg
Hexachlorobutadiene	< 0.10 mg/Kg
Hexachlorocyclopentadiene	< 0.25 mg/Kg
Hexachloroethane	< 0.10 mg/Kg
Indeno(1,2,3-cd)pyrene	< 0.10 mg/Kg
Isophorone	< 0.10 mg/Kg
2-Methylnaphthalene	< 0.10 mg/Kg
Naphthalene	< 0.10 mg/Kg
2-Nitroaniline	< 0.25 mg/Kg
3-Nitroaniline	< 0.25 mg/Kg
4-Nitroaniline	< 0.25 mg/Kg
Nitrobenzene	< 0.10 mg/Kg
N-Nitrosodi-n-propylamine	< 0.10 mg/Kg
N-Nitrosodiphenylamine	< 0.10 mg/Kg
Phenanthrene	0.50 mg/Kg
Pyrene	1.20 mg/Kg
1,2,4-Trichlorobenzene	< 0.10 mg/Kg

COMMENTS: Analyzed by GC/MS at Missouri Department of Natural Resources Laboratory.

(1) The following compounds were detected below quantitation limits and their estimated concentrations are as follows:

(a) Acenaphthylene	0.046 mg/Kg
(b) Acenaphthene	0.037 mg/Kg
(c) Dibenzofuran	0.019 mg/Kg
(d) Fluorene	0.030 mg/Kg

ENVIRONMENTAL SERVICES PROGRAM
RESULT OF SAMPLE ANALYSIS

Sample No. 94-1711

Reported to: BRIAN ALLEN
Affiliation: SPFD

Date: 8/23/94
Project Code: 3658/3538

Sample Description:
HUBERT WHEELER STATE SCHOOL, ST. LOUIS CITY
GRAB OF BLACK TAR-LIKE MATERIAL COLLECTED FROM
GROUND SURFACE NEAR WHERE MATERIAL OOZES OUT OF GROUND

Collected by: BRIAN ALLEN
Affiliation: SPFD
Remarks: ADD TCLP

Date: 07/07/94

PARAMETERS	RESULTS
TOTAL SILVER	<2500 ug/Kg
TOTAL ARSENIC	3010 ug/Kg
TOTAL BARIUM	<10,000 ug/Kg
TOTAL CADMIUM	1250 ug/Kg
TOTAL CHROMIUM	<2500 ug/Kg
TOTAL MERCURY	<25 ug/Kg
TOTAL LEAD	42,700 ug/Kg
TOTAL SELENIUM	1993 ug/Kg
VOA RESULT	
Chloromethane	< 25 ug/L

PARAMETERS	RESULTS
Vinyl Chloride	< 25 ug/L
Bromomethane	< 25 ug/L
Chloroethane	< 25 ug/L
1,1-Dichloroethene	< 25 ug/L
Acetone	<100 ug/L
Carbon Disulfide	< 25 ug/L
Methylene Chloride	< 25 ug/L
Methyl-tertiary-butyl Ether	< 25 ug/L
trans-1,2-Dichloroethene	< 25 ug/L
1,1-Dichloroethane	< 25 ug/L
2-Butanone	<100 ug/L
cis-1,2-Dichloroethene	< 25 ug/L
Chloroform	< 25 ug/L
1,1,1-Trichloroethane	< 25 ug/L
Carbon Tetrachloride	< 25 ug/L
Benzene	< 25 ug/L
1,2-Dichloroethane	< 25 ug/L
Trichloroethene	< 25 ug/L
1,2-Dichloropropane	< 25 ug/L
Bromodichloromethane	< 25 ug/L
2-Hexanone	<100 ug/L
trans-1,3-Dichloropropene	< 25 ug/L
Toluene	< 25 ug/L
cis-1,3-Dichloropropene	< 25 ug/L
1,1,2-Trichloroethane	< 25 ug/L
4-Methyl-2-Pentanone	<100 ug/L
Tetrachloroethene	< 25 ug/L
Dibromochloromethane	< 25 ug/L
Chlorobenzene	< 25 ug/L
Ethylbenzene	< 25 ug/L

PARAMETERS	RESULTS
Total Xylenes	< 25 ug/L
Styrene	< 25 ug/L
Bromoform	< 25 ug/L
1,1,2,2-Tetrachloroethane	< 25 ug/L
1,3-Dichlorobenzene	< 25 ug/L
1,4-Dichlorobenzene	< 25 ug/L
1,2-Dichlorobenzene	< 25 ug/L

COMMENTS: Analyzed by GC/MS at the Missouri DNR Environmental Services Program laboratory.

ACID EXTRACTABLES

Phenol	< 400	mg/Kg
2-Chlorophenol	< 400	mg/Kg
2-Methylphenol	< 400	mg/Kg
4-Methylphenol	< 400	mg/Kg
2-Nitrophenol	< 400	mg/Kg
2,4-Dimethylphenol	< 400	mg/Kg
2,4-Dichlorophenol	< 400	mg/Kg
4-Chloro-3-methylphenol	< 400	mg/Kg
2,4,6-Trichlorophenol	< 400	mg/Kg
2,4,5-Trichlorophenol	< 1000	mg/Kg
2,4-Dinitrophenol	< 1000	mg/Kg
4-Nitrophenol	< 1000	mg/Kg
2-Methyl-4,6-dinitrophenol	< 1000	mg/Kg
Pentachlorophenol	< 1000	mg/Kg

COMMENTS: Analyzed by GC/MS at Missouri Department of Natural Resources Laboratory.
(1) Elevated quantitation limits due to matrix interferences.

PARAMETERS	RESULTS
BASE NEUTRAL EXTRACTABLES	
Acenaphthene	7200 mg/Kg
Acenaphthylene	< 400 mg/Kg
Anthracene	14000 mg/Kg
Benzo(a)anthracene	14000 mg/Kg
Benzo(a)pyrene	32000 mg/Kg
Benzo(b)fluoranthene	22000 mg/Kg
Benzo(ghi)perylene	1200 mg/Kg
Benzoic acid	Not Analyzed
Benzo(k)fluoranthene	22000 mg/Kg
Benzyl alcohol	< 400 mg/Kg
Bis(2-chloroethoxy)methane	< 400 mg/Kg
Bis(2-chloroethyl)ether	< 400 mg/Kg
Bis(2-chloroisopropyl)ether	< 400 mg/Kg
Bis(2-ethylhexyl)phthalate	Not Analyzed
4-Bromophenyl phenyl ether	< 400 mg/Kg
Butyl benzyl phthalate	< 400 mg/Kg
4-Chloroaniline	< 1000 mg/Kg
2-Chloronaphthalene	< 400 mg/Kg
4-Chlorophenyl phenyl ether	< 400 mg/Kg
Chrysene	17000 mg/Kg
Dibenzo(a,h)anthracene	11000 mg/Kg
Dibenzofuran	4200 mg/Kg
1,2-Dichlorobenzene	< 400 mg/Kg
1,3-Dichlorobenzene	< 400 mg/Kg
1,4-Dichlorobenzene	< 400 mg/Kg
3,3-Dichlorobenzidine	< 1000 mg/Kg
Diethylphthalate	Not Analyzed
Dimethylphthalate	< 400 mg/Kg
Di-N-Butylphthalate	Not Analyzed

PARAMETERS	RESULTS
2,4-Dinitrotoluene	< 400 mg/Kg
2,6-Dinitrotoluene	< 400 mg/Kg
Di-n-octyl phthalate	< 400 mg/Kg
Fluoranthene	47000 mg/Kg
Fluorene	7300 mg/Kg
Hexachlorobenzene	< 400 mg/Kg
Hexachlorobutadiene	< 400 mg/Kg
Hexachlorocyclopentadiene	< 1000 mg/Kg
Hexachloroethane	< 400 mg/Kg
Indeno(1,2,3-cd)pyrene	20000 mg/Kg
Isophorone	< 400 mg/Kg
2-Methylnaphthalene	1000 mg/Kg
Naphthalene	1800 mg/Kg
2-Nitroaniline	< 1000 mg/Kg
3-Nitroaniline	< 1000 mg/Kg
4-Nitroaniline	< 1000 mg/Kg
Nitrobenzene	< 400 mg/Kg
N-Nitrosodi-n-propylamine	< 400 mg/Kg
N-Nitrosodiphenylamine	< 400 mg/Kg
Phenanthrene	28000 mg/Kg
Pyrene	28000 mg/Kg
1,2,4-Trichlorobenzene	< 400 mg/Kg

COMMENTS: Analyzed by GC/MS at Missouri Department of Natural Resources Laboratory.
(1) Elevated quantitation limits due to matrix interferences.

SITE ASSESSMENT REVIEW SUMMARY

HUBERT WHEELER STATE SCHOOL
5707 WILSON AVENUE
ST. LOUIS, MISSOURI

August 10, 1994

Site Description

The Hubert Wheeler State School is located at 5707 Wilson Avenue in St. Louis, Missouri, (See attached street guide). The site is located north of Wilson Road just south of Interstate 44, in a mixed commercial and residential area. The Deaconess Hospital, Executives Examination Facility is located adjacent to the site on the west. Residential areas are located east and south of the site.

During recent years, a black tar-like material, resembling coal tar, has occasionally oozed from the ground surface in the courtyard area, at the northwest corner of the subject site. The oozing reportedly occurred more frequently during warm periods of the year. The school placed asphalt paving over the courtyard area to minimize the problems associated with the tar-like material. However, the material continues to ooze through the asphalt in various locations. In addition, several years ago, school maintenance personnel installed a concrete walkway from the asphalt playground to the school. During excavation for the walkway, the black material was reportedly "flowing" at a depth of approximately 3 feet. At least one drum was also discovered during the excavation.

Historical Documents Review

The information obtained from the historical documents review indicates that between 1907 and 1959 the site and surrounding area was controlled by a succession of property owners including Laclede Fire Brick Manufacturing Company, Laclede-Christy Company, and the H. K. Porter Company. The property was sold to Ann S. Dattilo in 1959 who leased the property to H. K. Porter Company and Jablonlow-Kom Theaters until the property was sold in 1966 to a consortium of investors for the Hampton Industrial Park.

Building and occupancy permits indicate that between 1950 and 1967 office and warehouse facilities were constructed by St. Louis Coke and Foundry Supply and by M. W. Warren Coke Company. In addition, a warehouse facility constructed in 1960 for the St. Louis Coke and Foundry Supply was apparently used for the storage of V.M.P. Naptha.

Aerial photographs taken in 1960 and 1964 (attached) indicate the site was vacant with apparent landfilling operations occurring north and west of the site. Buildings and structures likely associated with the foundry and coke companies were located north of the site. By 1969, the site appeared abandoned, buildings previously located north of the site had been demolished and the landfilling operations appeared to have ceased.

SITE ASSESSMENT ACTIVITIES

August, 1993 Subsurface Assessment: Included the completion of 10 soil borings to an approximate depth of 10 feet in the vicinity of the asphalt courtyard area. Continuous soil samples were collected with a split-spoon continuous sampler. The soil samples were observed for visual staining and field-screened for the presence of volatile organics using a Photovac Microtip photoionization detector (PID). One soil sample from each boring was retained for analytical testing. Generally, the soil sample yielding the highest PID reading, or in the absence

of PID readings, the soil sample which exhibited visual oil staining or discoloration, was retained. The soil samples were analyzed for priority pollutants including metals, volatiles, semi-volatiles, pesticides and PCB's, total cyanide, and total phenol by EPA Methods 6000/7000, 8240, 8270, 8080, 9012, and 9066, respectively. In addition to the priority pollutant analyses, the soil sample collected from Boring B-8 was analyzed for TCLP Lead using EPA Method 1311/7421, and the soil samples obtained from borings placed in the apparent coal tar seeps (B-8 and B-9) were screened for the presence of Dioxin using SOW Method 880. See Tables 1 and 2 for a summary of analytical results.

June, 1994 Magnetometer Gradiometer (MAG) Survey: The MAG technology is a passive geophysical technique which measures the earth's magnetic field. Metallic features of the surface and subsurface locally affect the magnetic field and produce anomalies, which are apparent when the measured field recorded by the instrument is plotted. The approximate location of each anomaly is plotted on a site map and potential drum burial locations are indicated. The magnetic field is affected by most types of metal and does not differentiate between them.

A 20-foot grid was established over the courtyard area using a level with vernier. Readings for both the total magnetic field and the magnetic gradient were taken at 10 foot spacings over the courtyard area. The magnetic gradient was plotted on a site plan to assist in identifying the locations of magnetic anomalies. (See Plate 1) The typical gradient response for a subsurface metallic feature is a high positive and associated low negative, with the probable location of the buried metal being between the two extreme values.

July, 1994 Surface Soil Composite Sampling: A total of ten surface soil (0 to 6-inches) composite samples were collected from the areas surrounding the asphalt playground area. The soil samples were submitted for analytical testing including total lead and semi-volatile organics using EPA Methods 6010 and 8270, respectively. See attached Table 3 for analytical results.

July, 1994 Infrared Thermographic (IR) and Ground Penetrating Radar (GPR) Surveys: The IR technology is used to map minute surface temperature differences caused by the differential adsorption of solar energy by surface and subsurface materials. Differences in surface and subsurface materials create an abnormal surface temperature profile making IR a viable technology for identifying subsurface voids, drums, underground storage tanks, and/or contaminated soil plumes. The limitation of IR is that it only sees the surface and can not give any indication as to the type of subsurface feature creating the anomaly or the depth of an anomaly. The GPR technology is a technique which can be used to further characterize anomalies identified by the IR technology. The GPR transmits electromagnetic pulses into the subsurface areas in question. The pulses are echoed back to a receiver which records the data. The data represents subsurface conditions and can be used to identify the approximate depth and size of the subsurface anomalies. The limitation of this technology is the negative effect clay has on its ability to conduct a signal.

The combined observations of the IR and GPR investigations resulted in the location of four suspected subsurface anomaly areas, as shown on the attached Plate 2.

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1 inch = 2000 feet

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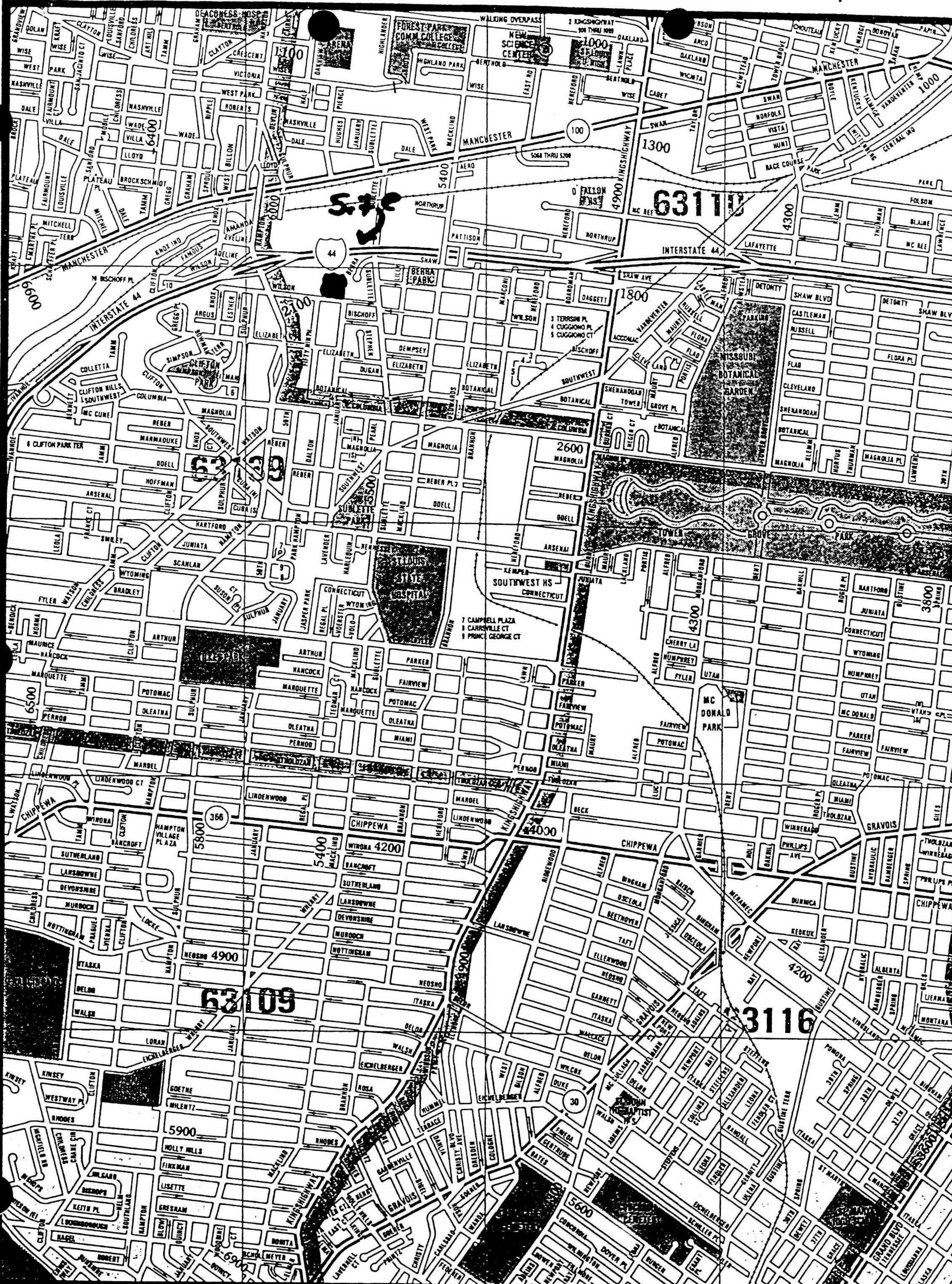

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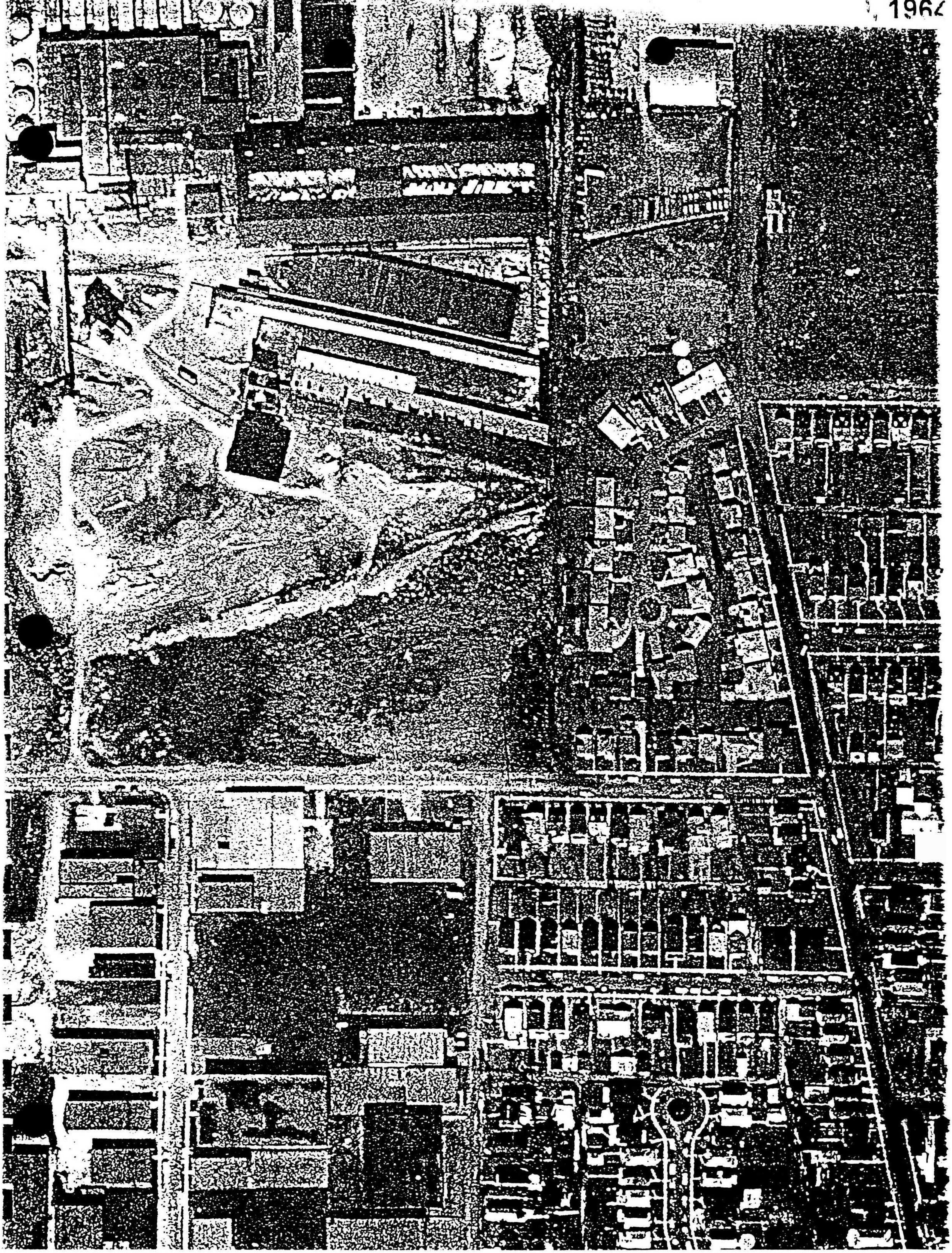
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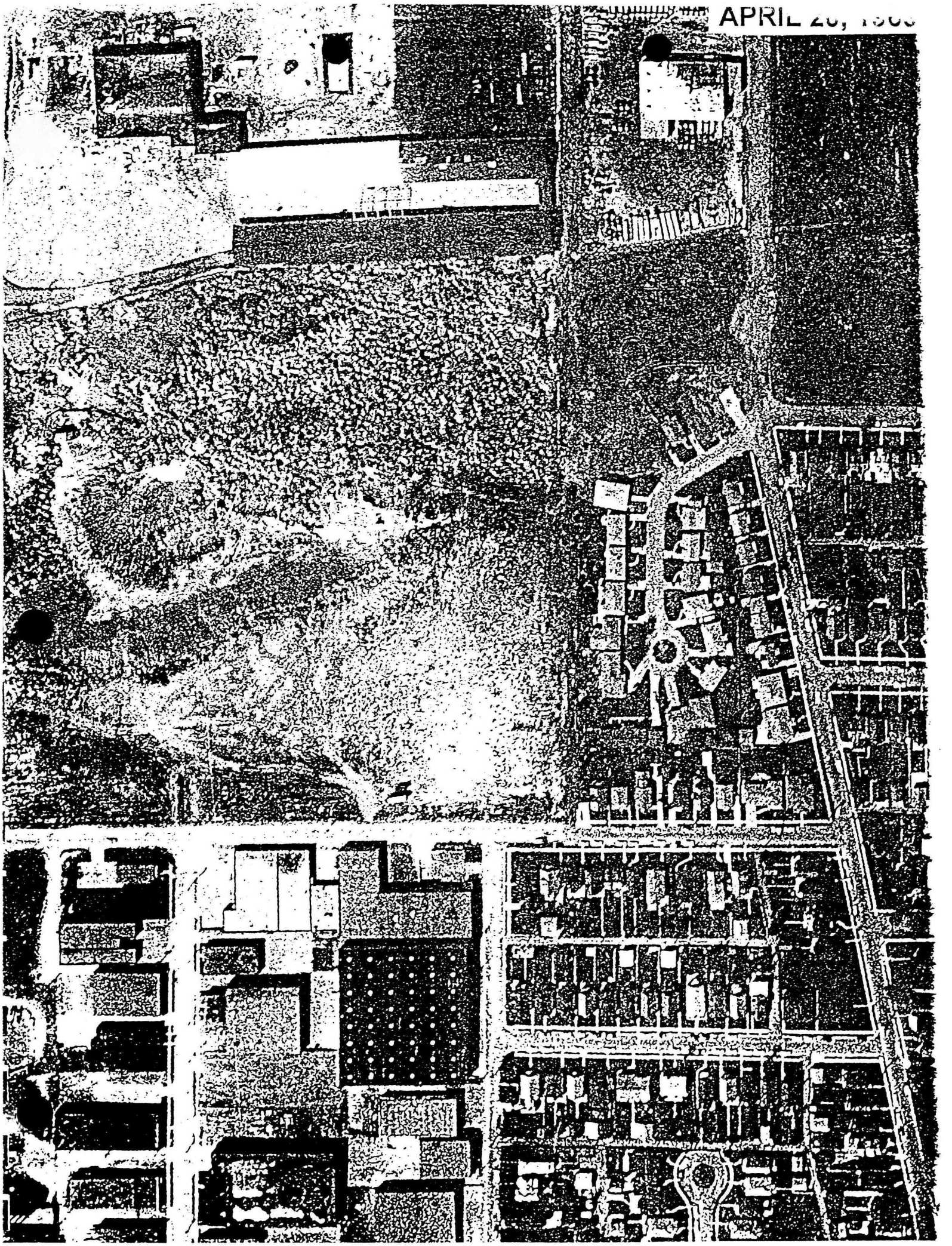


TABLE 1

ANALYTICAL RESULTS SUMMARY - METALS

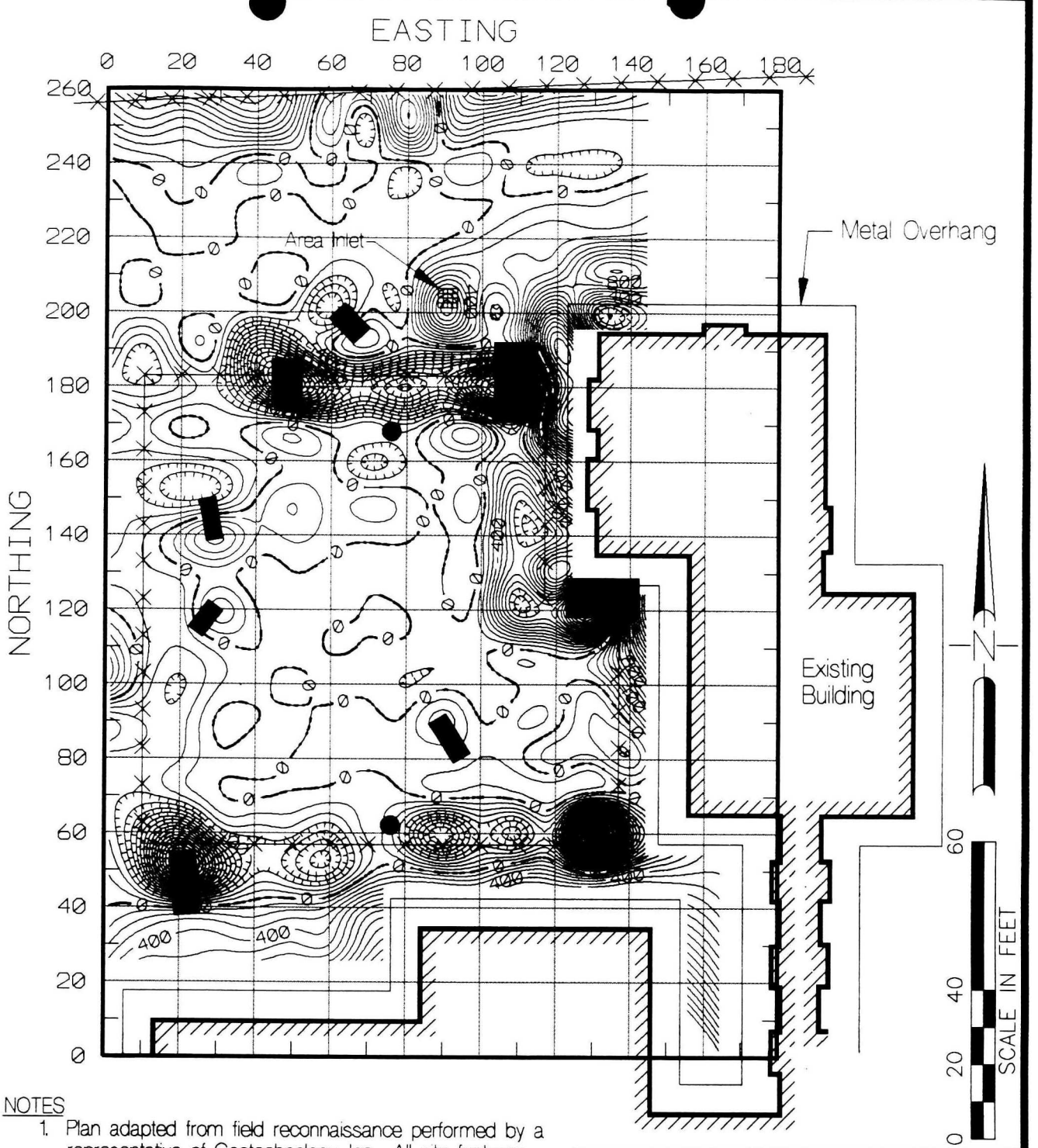
METALS DETECTED	BORINGS (SAMPLE DEPTH FT.)									
	B-1 (3-7)	B-2 (8-10)	B-3 (3-5)	B-4 (6-8)	B-5 (1-4)	B-6 (3-5)	B-7 (6-8)	B-8 (1-3)	B-9 (7-9)	B-10 (1-3)
Arsenic	4.33	7.97	7.65	7.95	6.07	8.81	8.97	9.55	6.93	7.42
Beryllium	0.525	0.620	0.852	0.646	0.335	0.387	0.693	0.408	0.565	0.514
Cadmium	0.830	0.907	1.34	0.581	0.656	1.22	0.713	0.806	0.865	1.77
Chromium	14.9	18.9	13.7	21.0	12.2	62.2	18.6	12.0	13.2	9.62
Copper	17.6	29.4	35.5	13.3	9.68	54.5	15.3	13.9	20.2	13.3
Lead (total)	192	139	303	40.7	79.9	308	14.5	338	115	33.6
Lead (TCLP)	NA	NA	NA	NA	NA	NA	NA	0.123	NA	NA
Mercury	0.14	0.47	0.25	ND	0.26	0.63	ND	ND	0.11	0.39
Nickel	15.8	18.9	17.9	16.8	10.9	13.8	19.8	11.6	18.3	13.7
Selenium	ND	0.391	0.635	ND	ND	0.332	ND	0.520	0.530	ND
Silver	0.500	0.729	ND	0.586	ND	ND	ND	ND	0.720	0.986
Zinc	114	113	293	64.6	80.8	232	50.6	163	98.0	44.5

1 - Analtical Results are presented as Parts Per Million (mg/kg, mg/l)
NA - Parameter not analyzed
ND - Parameter not detected above the analytical detection limit

TABLE 2
ANALYTICAL RESULTS SUMMARY (Soil Borings)
SEMI-VOLATILE ORGANICS

SEMI-VOLATILE ORGANICS DETECTED	MDOH "ASL"	BORINGS Sample Depth (ft.)									
		B-1 (3-7)	B-2 (8-10)	B-3 (3-5)	B-4 (6-8)	B-5 (1-4)	B-6 (3-5)	B-7 (6-8)	B-8 (1-3)	B-9 (7-9)	B-10 (1-3)
2-methynaphthalene		.055	ND	ND	ND	0.160	ND	ND	.15	ND	2.4
Acenaphthyene		.072	ND	0.080	ND	0.71	ND	ND	.110	ND	1.4
Acenaphthlene		1.04	ND	0.150	ND	0.69	ND	ND	2.1	ND	8.2
Dibenzofuran		.610	ND	0.085	ND	0.44	ND	ND	1.2	ND	4.5
Flourene		1.3	ND	0.130	ND	0.57	ND	ND	2.3	ND	6.7
Phenanthrene		12.0	0.32	1.8	.120	6.1	33.0	ND	23.0	ND	83.0
Anthracene		2.9	ND	0.35	ND	1.2	7.2	ND	6.5	ND	16.0
Carbazole		1.4	ND	0.16	ND	0.82	ND	ND	3.0	ND	12.0
Di-n-butylphthalate		0.17	0.15	0.58	.081	ND	ND	ND	.068	ND	ND
Fluoranthene	2,300	13.0	0.31	2.4	.120	8.4	36.0	ND	28.0	ND	104.0
Pyrene	1,700	8.6	0.28	2.5	.106	6.4	35.0	ND	20.0	ND	93.0
Benzo(a)anthracene	0.44	5.0	0.13	1.2	ND	3.4	14.0	ND	12.0	ND	45.0
Chrysene	0.44	4.2	0.16	1.3	.056	3.3	15.0	ND	12.0	ND	54.0
Benzo(b)Fluoranthene	0.44	5.3	0.20	1.9	.089	5.2	16.0	ND	14.0	ND	62.0
Benzo(k)Fluoranthene	0.44	1.7	0.074	0.52	ND	0.45	7.0	ND	4.6	ND	29.0
Benzo(a)Pyrene	0.44	3.8	0.048	1.07	ND	3.0	13.0	ND	9.8	ND	41.0
Indeno(1,2,3-cd)pyrene		1.8	0.082	0.57	ND	1.4	5.5	ND	4.7	ND	18.0
Dibenzo(a,h)anthracene	0.44	0.46	ND	0.17	ND	0.42	ND	ND	1.4	ND	6.0
Benzo(g,h,i)perylene		1.6	0.077	0.56	ND	1.4	5.1	ND	4.3	ND	18.0
Naphthalene		ND	ND	ND	0.26	ND	ND	ND	.16	ND	3.9

1 - Analtical Results are presented as Parts Per Million (mg/kg, mg/l)
NA - Parameter not analyzed ND - Parameter not detected above the analytical detection limit
Shaded values indicate levels which exceed MDOH Any Use Soil Levels for residential sites.



NOTES

1. Plan adapted from field reconnaissance performed by a representative of Geotechnology, Inc. All site features are shown approximate only.
2. Contour Interval is 100 gammas/meter.
3. No data were collected along E10 from N60 to N160 due to proximity to fence.

LEGEND

- Negative Magnetic Gradient Contour
- Positive Magnetic Gradient Contour
- Chainlink Fence
- Metal Pipe Extending Above Ground
- General Area of Potential Buried Metal

Drawn By: WAH	Ck'd By:	App'vd By:
Date: 7-11-94	Date:	Date:

GEOTECHNOLOGY, INC.
ENGINEERING AND ENVIRONMENTAL SERVICES
SAINT LOUIS • KANSAS CITY

Hubert Wheeler State School
St. Louis, Missouri

PLAN OF SITE AND MAGNETIC GRADIENT SURVEY

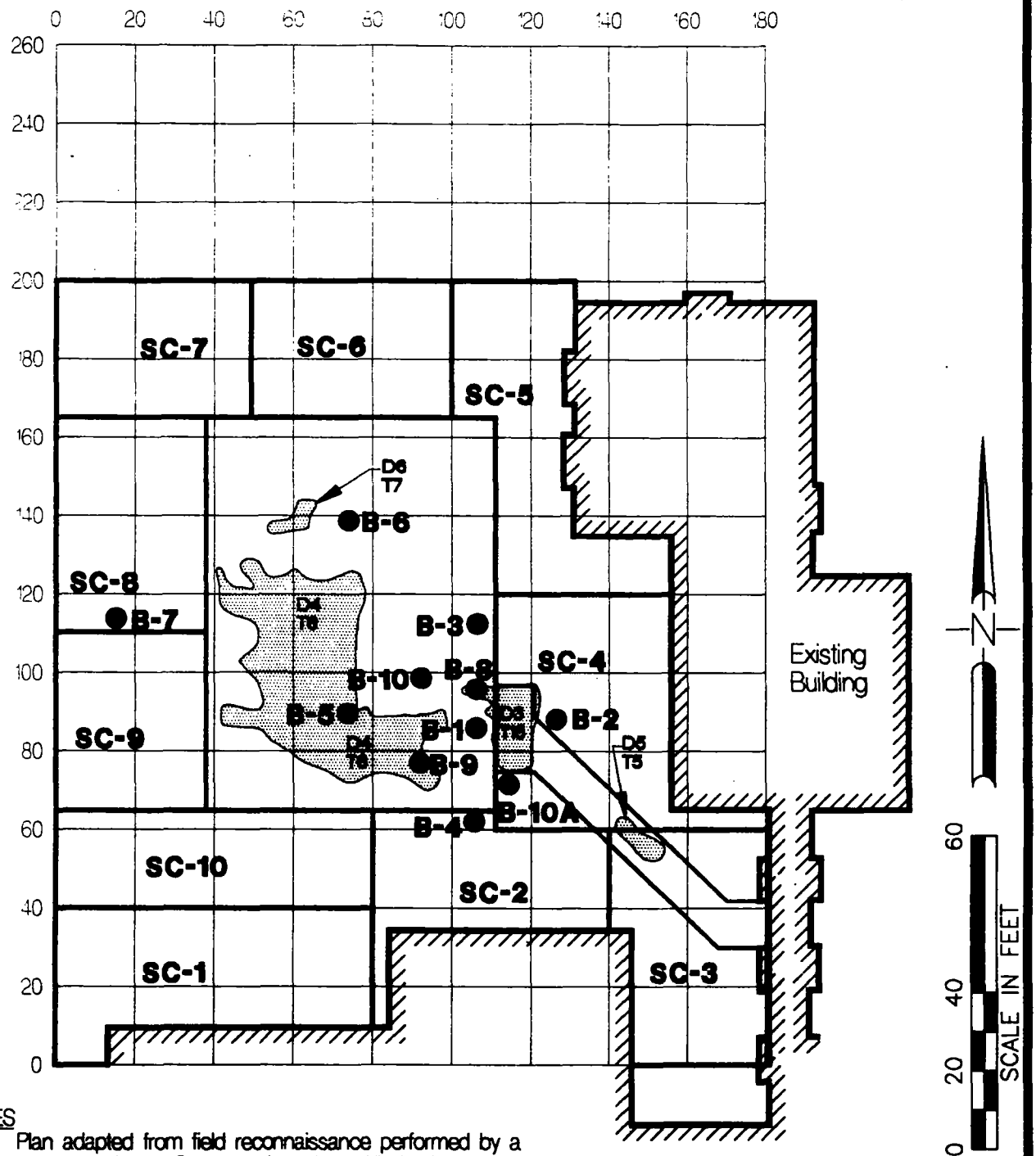
Project Number
2498.013120.05

PLATE 1

TABLE 3
ANALYTICAL RESULTS SUMMARY (Surface Soil Samples)

SEMI-VOLATILE ORGANICS DETECTED	MDOH ASL	BORINGS									
		SC-1	SC-2	SC-3	SC-4	SC-5	SC-6	SC-7	SC-8	SC-9	SC-10
total lead		99.1	124	64.1	57.9	51.0	48.1	27.2	65.8	70.4	117
2-methynaphthalene		ND	ND	0.039	ND	ND	ND	ND	ND	ND	ND
Acenaphthylene		ND	ND	ND	ND	0.049	ND	ND	ND	ND	0.200
Acenaphthene		0.280	1.2	0.240	1.7	0.088	ND	ND	0.840	ND	0.630
Dibenzofuran		ND	0.590	0.130	0.870	0.040	ND	ND	0.390	ND	0.410
Flourene		0.270	1.3	0.240	1.9	0.076	ND	ND	0.760	ND	0.550
Phenanthrene		3.6	10.3	2.6	13.3	1.030	2.6	0.810	6.1	2.2	8.3
Anthracene		0.950	3.0	0.650	4.0	0.250	0.580	ND	1.5	0.500	2.2
Carbazole		0.41	1.6	0.280	2.2	0.120	0.260	ND	0.750	0.250	1.09
Di-n-butylphthalate		0.220	0.21	0.260	.250	0.240	0.400	0.780	0.490	0.460	0.260
Fluoranthene	2,300	5.5	12.0	3.0	15.0	1.6	3.7	1.4	7.2	3.4	11.0
Pyrene	1,700	4.8	10.5	2.7	13.0	1.5	2.8	1.2	5.9	2.9	10.7
Butylbenzylphthalate		ND	ND	0.091	ND	ND	ND	ND	ND	ND	ND
Benzo(a)anthracene	0.44	2.6	5.6	1.4	7.1	0.800	1.4	0.550	3.1	1.4	5.2
Chrysene	0.44	2.7	5.5	1.5	7.2	0.850	1.5	0.640	3.4	1.6	5.9
bis(2-Ethylhexyl) phthalate		1.0	0.3	0.380	0.360	0.340	0.340	ND	0.470	0.300	0.390
Benzo(b)Fluoranthene	0.44	2.4	4.9	1.3	6.5	0.890	1.2	0.590	3.1	1.3	6.0
Benzo(k)Fluoranthene	0.44	1.3	3.6	0.980	3.4	0.550	1.1	0.400	2.0	1.2	4.7
Benzo(a)Pyrene	0.44	2.2	4.8	1.30	6.0	0.730	1.2	0.540	2.8	1.4	4.9
Indeno(1,2,3-cd)pyrene		1.4	2.8	0.70	3.1	0.380	0.950	0.410	2.1	1.07	2.3
Dibenzo(a,h)anthracene	0.44	0.380	1.05	0.230	1.2	0.099	0.240	ND	0.510	0.260	0.780
Benzo(g,h,i)perylene		1.3	2.4	0.610	2.5	0.340	0.930	0.410	2.0	1.030	1.9
Naphthalene		ND	ND	ND	0.20	ND	ND	ND	ND	ND	ND

1 - Analtical Results are presented as Parts Per Million (mg/kg)
ND - Parameter not detected above the analytical detection limit
Shaded values indicate levels which exceed MDOH Any Use Soil Levels for residential sites.



NOTES

1. Plan adapted from field reconnaissance performed by a representative of Geotechnology, Inc. All site features are shown approximate only.

2. Surface sampling areas and boring locations were established in the field with reference to existing site featurs and site grid and are shown approximate only.

LEGEND

SC-1 Surface Sampling Area

● Boring Location

D# T# Infrared Anomaly with Depth to Anomaly (D#) and and Thickness of Anomaly (T#)

Drawn By: WAH	Ckd By:	Appvd By:
Date: 8-8-94	Date:	Date:

GEOTECHNOLOGY, INC.
ENGINEERING AND ENVIRONMENTAL SERVICES
SAINT LOUIS • KANSAS CITY

Hubert Wheeler State School
St. Louis, Missouri

PLAN OF SITE, SAMPLING LOCATIONS AND INFRARED ANOMALIES

Project Number
2498.01.3120.05

PLATE 2

Clinical Toxicology of Commercial Products

Fifth Edition

ROBERT E. GOSSELIN, M.D., Ph.D.

Irene Heinz Given Professor of Pharmacology, Dartmouth Medical School, Hanover, New Hampshire

ROGER P. SMITH, Ph.D.

Professor and Chairman, Department of Pharmacology and Toxicology, Dartmouth Medical School, Hanover, New Hampshire

HAROLD C. HODGE, Ph.D., D.Sc.

Professor and Chairman Emeritus of Pharmacology and Toxicology, School of Medicine and Dentistry, The University of Rochester, Rochester, New York; Professor in Residence of Pharmacology and Oral Biology, University of California, San Francisco; of Environmental Toxicology, and of Pharmacology and Medical Therapeutics, University of California, Irvine, California

With the assistance of
JEANNETTE E. BRADDOCK

Assistant in Pharmacology, Department of Pharmacology, School of Medicine and Dentistry, The University of Rochester, Rochester, New York

1981

WILLIAMS & WILKINS
Baltimore • Hong Kong • London • Sydney

Contents

paraffins, 3.4% alkylbenzenes and 1.5% benzene (Carpenter *et al.*, 1975c). Cats were depressed but survived a 4-hour vapor exposure to 12,000 ppm.

See also: Kerosene, *Reference Congener in Section III.*
Ref.: Carpenter et al., 1975c; Gerarde, 1962.

334 334 Stoddard Solvent

White spirits, Safety solvent naphtha, Mineral spirits no. 10, High flash naphtha

Toxicity Rating: 3. One of the higher-boiling fractions of petroleum naphtha. Consists of a mixture of straight and branched chain paraffinic hydrocarbons (C_9 to C_{12}), naphthenes (cycloparaffins) and higher aromatics, boiling in the range of 305 to 410°F (152 to 210°C). Usually mineral spirits no. 10 and Stoddard solvent are considered as synonymous names, but if a distinction is made, the former has a slightly lower boiling point range than the latter within the specifications above. (When unqualified, the term mineral spirits refers to a distinctly more volatile "cut" which resembles ligroin.) These various fractions are used as dry cleaner solvents and sometimes as paint thinners. They closely resemble kerosene in toxicity. One precisely characterized solvent from a major American producer distilled between 307 and 382°F; it consisted of 48% paraffins, 38% cycloparaffins, 14% alkylbenzene and 0.1% benzene. Inhalation of 1400 ppm (substantial saturation at 25°C) killed some rats and cats within 8 hours. Only slight eye irritation in humans during 15 minutes at 150 ppm.

See also: Kerosene, *Reference Congener in Section III.*
Ref.: Carpenter et al., 1975b; Gerarde, 1962.

335 335 VM&P Naphthas

Varnish makers' and painters' naphtha, Mineral spirits, Ligroin, Refined solvent naphtha

Toxicity Rating: 3. Any of several petroleum "cuts" distilling between about 200 and 350°F (94 to 175°C), consisting chiefly of C_7 to C_{10} aliphatic (paraffinic) hydrocarbons. The terminology for these fractions is inconstant and misleading. For example, in commerce there are available at least three VM&P naphthas with different flash points and somewhat different boiling point ranges within the limits specified above. The terms ligroin and refined solvent naphtha often refer to a fraction restricted to C_8 and C_9 hydrocarbons with a boiling point range of about 265 to 310°F (130 to 155°C). Furthermore the name ligroin is sometimes used inappropriately to refer to "light ligroin", which is synonymous with petroleum ether (see latter above). All of these solvents are more volatile than kerosene but share its toxic potential. One precisely characterized solvent from a major American producer distilled between 244 and 301°F; it consisted of 55% paraffins, 33% cycloparaffins, 12% alkylbenzenes, and 0.1% benzene (Carpenter *et al.*, 1975a). Air containing saturated vapors of this product (about 15000 ppm) could not be inhaled for more than a few minutes without jeopardizing the survival of test animals. During a 15-minute inhalation period, 3 (or 4) of 7 human subjects had upper respiratory tract irritation and eye irritation at 880 ppm.

See also: Kerosene, *Reference Congener in Section III.*
Ref.: Carpenter et al., 1975a; Gerarde, 1962; Merck and Co., 1976; Sax, 1968.

Other hydrocarbon mixtures derived from petroleum and oil

336 336 Petroleum (Crude)

As taken from the ground, petroleum is a complex mixture of hydrocarbons containing mainly paraffins (saturated, straight chains), and some isoparaffins (saturated, branched chains), naphthenes (cycloparaffins) and aromatics, with molecular weights ranging from the very lightest to over 6000. Depending on the origin of the crude oil, the nature of these hydrocarbons varies over wide limits. Also present and varying with the source (but seldom exceeding 10%) are: oxygen compounds (naphthenic acids, alcohols, ketones, aromatic acids, esters and phenols, and very high molecular weight cyclic compounds of resinous or asphaltic character containing both oxygen and sulfur); sulfur compounds (elemental sulfur, H_2S, mercaptans, disulfides, thiophenes and thioethers); nitrogen compounds (basic and nonbasic nitrogen compounds present in traces and probably derived from proteins in materials from which petroleum was formed); traces of metal salts.

Ref.: Gerarde, 1962.

337 337 Liquid Petrolatum

Toxicity Rating: 1. The official USP name for a mixture of refined liquid hydrocarbons of high viscosity. Also known as white mineral oil and closely related to the semisolid hydrocarbon mixture known as white petrolatum or white petroleum jelly. All of these materials are prepared by refining cruder lubricating oils to remove unsaturated or volatile compounds, as well as resins and com-

FIRST AID & GENERAL EMERGENCY TREATMENT
INGREDIENTS INDEX • THERAPEUTICS INDEX
SUPPORTIVE TREATMENT • TRADE NAME INDEX

TOXICITY RATING CHART

Toxicity Rating or Class	Probable Oral LETHAL Dose (Human)		
	Dose		For 70 kg. person (150 lb.)
6 Super toxic	less than 5	mg./kg.	A taste (less than 7 drops)
5 Extremely toxic	5–50	mg./kg.	Between 7 drops and 1 teaspoonful
4 Very toxic	50–500	mg./kg.	Between 1 tsp. and 1 ounce
3 Moderately toxic	0.5–5	gm./kg.	Between 1 oz. and 1 pint (or 1 lb.)
2 Slightly toxic	5–15	gm./kg.	Between 1 pt. and 1 quart
1 Practically nontoxic	above 15	gm./kg.	More than 1 quart (2.2 lb.)

FIRST AID & GENERAL EMERGENCY TREATMENT
INGREDIENTS INDEX • THERAPEUTICS INDEX
SUPPORTIVE TREATMENT • TRADE NAME INDEX
GENERAL FORMULATIONS • MANUFACTURERS' INDEX
FIRST AID & GENERAL EMERGENCY TREATMENT
INGREDIENTS INDEX • THERAPEUTICS INDEX
SUPPORTIVE TREATMENT • TRADE NAME INDEX
GENERAL FORMULATIONS • MANUFACTURERS' INDEX

File: Hubert Wheeler State School

F RT WHEELER STATE SCHOOL

PA/SI REFERENCE 46

STATE OF MISSOURI

DEPARTMENT OF NATURAL RESOURCES

MEMORANDUM

DATE: September 16, 1994

TO: Hubert Wheeler State School
Superfund File

FROM: Julie A. Bloss, Environmental Specialist JAB
Site Evaluation Unit, Superfund Section
Hazardous Waste Program

SUBJECT: Possible Sources of Tar Contamination

Listed below are the companies associated with the property through title searches of the area:

H.K. Porter Company
a.k.a. Quaker Rubber Corporation
St. Louis Coke & Foundry Supply
a.k.a. M.W. Warren Coke Company
Laclede Fire Brick Manufacturing Company
Laclede-Christy Company
a.k.a. Laclede-Christy Clay Products Company

Known or potentially hazardous waste sites within approximate 1 mile radius:

Ace Metals, 5900 Manchester
A.J. Doyle Company, Inc., 2360 S. 59th Avenue
Bitucote Products Company, 6350 Knox Industrial Drive (northwest of site)
Chase Bag Company, 5051 Southwest Avenue (southwest of site)
Drumtech, 5066 near Manchester
Kesmer Farms, 2101 Wilson Avenue
King Adhesives Corp., 5227 Northup Avenue
Midwest Industrial Chemical Company, 1509 Sublette, (north or southeast of site)
Navy Brand Manufacturing Company, 5111 SW Ave (southeast of site)
Ray Schumann & Associates, 5464 Highland Park
Rheox property, 5548 Manchester Ave, (northeast of site)
SKF Industries, 2320 Marconi Avenue (deferred to RCRA)
Sterling Laquer Manufacturing, 3150 Brannon Avenue
St. Louis Police Department Stables, 2634 Hampton (southwest of site)
UE Macklind Substation, 1623 Macklind Avenue

Other sites of interest within a 4 mile radius:

City of St. Louis demolition landfill, 1900 Hampton, (west of site) ID#218912
Marnati Quarry, 5037 Parker Avenue

JAB:dl

FS14 CORPORATION SYSTEM NOT UPDATED
ABSTRACT OF CORPORATE RECORD PAGE 00
CHARTER NO 00021380
NAME LACLEDE-CHRISTY COMPANY

PRINCIPAL ADDRESS:
STREET PRINCIPAL ADDRESS CHANGE DATE
CITY STATE ZIP CODE

STATUS I STATUS DATE ANNUAL REPORT FILED LAST AR YR
STATE OF INCORPORATION MO REPORT PERIOD: BEG DATE END DATE
EXTENSION DATE ASSETS UNKNOWN

AGENT NAME ADDR
CITY STATE ZIP CODE
AGENT CHANGE DATE AGENT RESIGNATION DATE

FILING DATE EXPIRATION DATE DISSOLUTION DATE
INCORPORATION DATE MERGED INTO MERGER DATE
CURRENT NAME DATE
FS14-004 MORE INFORMATION AVAILABLE
PF4-C-CR PF6-C-GS PF9-C-CA PF10-NEW SCRN PF11-PRT PF12-RTN PA1-PG FWD
FS14 CORPORATION SYSTEM NOT UPDATED
ABSTRACT OF CORPORATE RECORD PAGE 002

CHARTER NO 00021380
NAME LACLEDE-CHRISTY COMPANY

DATE STATUS FR DATE STATUS FR DATE STATUS FR

----------PRIOR NAMES----------
0000000 LACLEDE-CHRISTY CLAY PRODUCTS COMPANY

FS14-003 NO MORE NAMES AVAILABLE
PF4-C-CR PF6-C-GS PF9-C-CA PF10-NEW SCRN PF11-PRT PF12-RTN PA1-PG FWD PA2-PG BK
FS14 CORPORATION SYSTEM NOT UPDATED
ABSTRACT OF CORPORATE RECORD PAGE 001
CHARTER NO F00010687
NAME QUAKER RUBBER CORPORATION

PRINCIPAL ADDRESS:
STREET PRINCIPAL ADDRESS CHANGE DATE
CITY STATE ZIP CODE

STATUS I STATUS DATE ANNUAL REPORT FILED LAST AR YR

STATE OF INCORPORATION REPORT PERIOD: BEG DATE END DATE
TENSION DATE ASSETS UNKNOWN

AGENT NAME ADDR
CITY STATE ZIP CODE
AGENT CHANGE DATE AGENT RESIGNATION DATE

FILING DATE EXPIRATION DATE DISSOLUTION DATE
INCORPORATION DATE MERGED INTO MERGER DATE
CURRENT NAME DATE
FS14-004 MORE INFORMATION AVAILABLE
PF4-C-CR PF6-C-GS PF9-C-CA PF10-NEW SCRN PF11-PRT PF12-RTN PA1-PG FWD
FS14 CORPORATION SYSTEM NOT UPDATED
ABSTRACT OF CORPORATE RECORD PAGE 002

CHARTER NO F00010687
NAME QUAKER RUBBER CORPORATION

DATE	STATUS	FR	DATE	STATUS	FR	DATE	STATUS	FR

----------PRIOR NAMES----------
0000000 H. K. PORTER COMPANY, INC. OF PITTSBURGH

FS14-003 NO MORE NAMES AVAILABLE
PF4-C-CR PF6-C-GS PF9-C-CA PF10-NEW SCRN PF11-PRT PF12-RTN PA1-PG FWD PA2-PG BK
FS14 CORPORATION SYSTEM
ABSTRACT OF CORPORATE RECORD PAGE 001
CHARTER NO 00013172
NAME ST. LOUIS COKE & FOUNDRY SUPPLY CO.

PRINCIPAL ADDRESS:
STREET PRINCIPAL ADDRESS CHANGE DATE
CITY STATE ZIP CODE

STATUS AG STATUS DATE 0419993 ANNUAL REPORT FILED 0419993 LAST AR YR 93
STATE OF INCORPORATION MO REPORT PERIOD: BEG DATE 0101 END DATE 1231
EXTENSION DATE ASSETS ABOVE $200,000

AGENT NAME R. E. WOODS, JR. ADDR 2817 HEREFORD STREET
CITY ST. LOUIS STATE MO ZIP CODE 63139
AGENT CHANGE DATE 0610977 AGENT RESIGNATION DATE

FILING DATE 0120902 EXPIRATION DATE PERP DISSOLUTION DATE
INCORPORATION DATE 0120902 MERGED INTO MERGER DATE
CURRENT NAME DATE 0301951
FS14-004 MORE INFORMATION AVAILABLE
PF4-C-CR PF6-C-GS PF9-C-CA PF10-NEW SCRN PF11-PRT PF12-RTN PA1-PG FWD

FS14 CORPORATION SYSTEM
ABSTRACT OF CORPORATE RECORD PAGE 00

CHARTER NO 00013172
NAME ST. LOUIS COKE & FOUNDRY SUPPLY CO.

DATE	STATUS	FR	DATE	STATUS	FR	DATE	STATUS	FR
0602992	AG	N	0401991	AG	Y	0215990	AG	Y
0721989	AG	Y	0225988	AG	N	0518987	AG	
0616986	AG		0514985	AG		0514984	AG	
0524983	AG		0517982	AG		1106981	AG	

----------PRIOR NAMES----------
0120902 M. W. WARREN COKE COMPANY

FS14-003 NO MORE NAMES AVAILABLE
PF4-C-CR PF6-C-GS PF9-C-CA PF10-NEW SCRN PF11-PRT PF12-RTN PA1-PG FWD PA2-PG BK
FS14 CORPORATION SYSTEM NOT UPDATED
ABSTRACT OF CORPORATE RECORD PAGE 001
CHARTER NO 00004336
NAME LACLEDE FIRE BRICK MANUFACTURING COMAPNY

PRINCIPAL ADDRESS:
STREET PRINCIPAL ADDRESS CHANGE DATE
CITY STATE ZIP CODE

STATUS I STATUS DATE ANNUAL REPORT FILED LAST AR YR
STATE OF INCORPORATION MO REPORT PERIOD: BEG DATE END DATE
EXTENSION DATE ASSETS UNKNOWN

AGENT NAME ADDR
CITY STATE ZIP CODE
AGENT CHANGE DATE AGENT RESIGNATION DATE

FILING DATE EXPIRATION DATE DISSOLUTION DATE
INCORPORATION DATE MERGED INTO MERGER DATE
CURRENT NAME DATE
FS14-004 MORE INFORMATION AVAILABLE
PF4-C-CR PF6-C-GS PF9-C-CA PF10-NEW SCRN PF11-PRT PF12-RTN PA1-PG FWD
FS14 CORPORATION SYSTEM NOT UPDATED
ABSTRACT OF CORPORATE RECORD PAGE 002

CHARTER NO 00004336
NAME LACLEDE FIRE BRICK MANUFACTURING COMAPNY

DATE	STATUS	FR	DATE	STATUS	FR	DATE	STATUS	FR

----------PRIOR NAMES----------

FS14-003 NO MORE NAMES AVAILABLE
PF4-C-CR PF6-C-GS PF9-C-CA PF10-NEW SCRN PF11-PRT PF12-RTN PA1-PG FWD PA2-PG BK
FS14 CORPORATION SYSTEM NOT UPDATED
ABSTRACT OF CORPORATE RECORD PAGE 001
CHARTER NO 00021380
NAME LACLEDE-CHRISTY COMPANY

PRINCIPAL ADDRESS:
STREET PRINCIPAL ADDRESS CHANGE DATE
CITY STATE ZIP CODE

STATUS I STATUS DATE ANNUAL REPORT FILED LAST AR YR
STATE OF INCORPORATION MO REPORT PERIOD: BEG DATE END DATE
EXTENSION DATE ASSETS UNKNOWN

ENT NAME ADDR
CITY STATE ZIP CODE
AGENT CHANGE DATE AGENT RESIGNATION DATE

FILING DATE EXPIRATION DATE DISSOLUTION DATE
INCORPORATION DATE MERGED INTO MERGER DATE
CURRENT NAME DATE
FS14-004 MORE INFORMATION AVAILABLE
PF4-C-CR PF6-C-GS PF9-C-CA PF10-NEW SCRN PF11-PRT PF12-RTN PA1-PG FWD
FS14 CORPORATION SYSTEM NOT UPDATED
ABSTRACT OF CORPORATE RECORD PAGE 002

CHARTER NO 00021380
NAME LACLEDE-CHRISTY COMPANY

DATE	STATUS	FR	DATE	STATUS	FR	DATE	STATUS	FR

----------PRIOR NAMES----------
0000000 LACLEDE-CHRISTY CLAY PRODUCTS COMPANY

FS14-003 NO MORE NAMES AVAILABLE
PF4-C-CR PF6-C-GS PF9-C-CA PF10-NEW SCRN PF11-PRT PF12-RTN PA1-PG FWD PA2-PG BK

Toxicological Profile for

POLYCYCLIC AROMATIC HYDROCARBONS (PAHs)

Draft for Public Comment

Update

Comment Period Ends: February 21, 1994

U.S. DEPARTMENT OF HEALTH & HUMAN SERVICES
Public Health Service
Agency for Toxic Substances and Disease Registry

DRAFT

TOXICOLOGICAL PROFILE FOR POLYCYCLIC AROMATIC HYDROCARBONS

Prepared by:

Clement International Corporation
Under Contract No. 205-88-0608

Prepared for:

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Public Health Service
Agency for Toxic Substances and Disease Registry

October 1993

CONTENTS

1. PUBLIC HEALTH STATEMENT

This Statement was prepared to give you information about polycyclic aromatic hydrocarbons (PAHs) and to emphasize the human health effects that may result from exposure to them. The Environmental Protection Agency (EPA) has identified 1,350 hazardous waste sites as the most serious in the nation. These sites comprise the "National Priorities List" (NPL): Those sites which are targeted for long-term federal cleanup activities. PAHs have been found in at least 585 of the sites on the NPL. However, the number of NPL sites evaluated for PAHs is not known. As EPA evaluates more sites, the number of sites at which PAHs are found may increase. This information is important because exposure to PAHs may cause harmful health effects and because these sites are potential or actual sources of human exposure to PAHs.

When a substance is released from a large area, such as an industrial plant, or from a container, such as a drum or bottle, it enters the environment. This release does not always lead to exposure. You can be exposed to a substance only when you come in contact with it. You may be exposed by breathing, eating, or drinking substances containing the substance or by skin contact with it.

If you are exposed to substances such as PAHs, many factors will determine whether harmful health effects will occur and what the type and severity of those health effects will be. These factors include the dose (how much), the duration (how long), the route or pathway by which you are exposed (breathing, eating, drinking, or skin contact), the other chemicals to which you are exposed, and your individual characteristics such as age, gender, nutritional status, family traits, life-style, and state of health.

1.1 WHAT ARE POLYCYCLIC AROMATIC HYDROCARBONS?

PAHs are a group of chemicals that are formed during the incomplete burning of coal, oil, gas, wood, garbage, or other organic substances, such as tobacco and charbroiled meat. PAHs can either be man-made or occur naturally. Most of these chemicals have no known use except for research purposes. A few of the PAHs are used in medicines and to make dyes, plastics, and pesticides, while others are contained in asphalt used in road construction. They are found throughout the environment in the air, water, and soil. There are more than 100 different PAH compounds. Although the health effects of the individual PAHs are not exactly alike, the following 17 PAHs are considered as a group in this profile:

- acenaphthene
- acenaphthylene
- anthracene
- benz(a)anthracene
- benzo(a)pyrene
- benzo(e)pyrene
- benzo(b)fluoranthene

- benzo(g,h,i)perylene
- benzo(j)fluoranthene
- benzo(k)fluoranthene
- chrysene
- dibenz(a,h)anthracene
- fluoranthene
- fluorene
- indeno(1,2,3-c,d)pyrene
- phenanthrene
- pyrene

These 17 PAHs were chosen to be included in this profile because (1) more information is available on these than on the others; (2) they are more harmful than many or most of the others; (3) there is a greater chance that you will be exposed to these PAHs than to the others; and (4) they were the ones most frequently identified at NPL hazardous waste sites.

As pure chemicals, PAHs generally exist as colorless, white, or pale yellow-green solids. They can have a faint, pleasant odor. Most PAHs do not occur alone in the environment (including those found at hazardous waste sites). They are found as parts of complex mixtures of chemicals. They can occur in the air either attached to dust particles or as solids in soil or sediment. They can also be found in substances such as crude oil, coal, coal tar pitch, creosote, and road and roofing tar.

More information can be found on the chemical and physical properties of PAHs in Chapter 3 and on their use and disposal in Chapter 4.

1.2 WHAT HAPPENS TO POLYCYCLIC AROMATIC HYDROCARBONS WHEN THEY ENTER THE ENVIRONMENT?

PAHs enter the environment largely as releases to air from volcanoes, forest fires, residential wood burning, and automobile and truck exhausts. They can also enter surface water through discharges from industrial plants and waste water treatment plants, and they can be released to soils at hazardous waste sites. The movement of PAHs in the environment depends on properties like their water solubility, vapor pressure, and molecular weight. PAHs in general do not easily dissolve in water. They are present in air as vapors or stuck to the surfaces of small solid particles and can travel long distances before they are removed through washout in rainfall or particle settling. From surface waters, some PAHs can evaporate into the atmosphere, but most will stick to solid particles and settle to the bottoms of rivers or lakes. In soils, the compounds are most likely to stick tightly to particles. Some PAHs can evaporate from surface soils to air. Certain PAHs in soils can also contaminate underground water. The PAH content of plants and animals living on the land or in water can be many times higher than the content of PAHs in soil or water. PAHs can break down to less short-lived products by reacting with sunlight and other chemicals in the air, generally over a period of days to weeks. Breakdown in soil and water generally takes weeks to months and is due mostly

to the actions of microorganisms. For more information on what happens to PAHs in the environment see Chapter 5.

1.3 HOW MIGHT I BE EXPOSED TO POLYCYCLIC AROMATIC HYDROCARBONS?

PAHs are present throughout the environment, and you may be exposed to these substances at home, while outside, or at the workplace. Typically, you will not be exposed to an individual PAH alone, but to a mixture of PAHs.

In the environment, you are most likely exposed to PAH vapors or PAHs that are attached to dust and other particles in the air. Sources include cigarette smoke, vehicle exhausts, asphalt roads, coal, coal tar, wild fires, agricultural burning, residential wood burning, and hazardous waste sites. Background levels of some representative PAHs in the air are reported to be 0.02–1.2 nanograms per cubic meter (ng/m^3; a nanogram is one-millionth of a milligram) in rural areas and 0.15–19.3 ng/m^3 in urban areas. You may be exposed to PAHs in soil near areas where coal, wood, gasoline, or other products have been burned. You may be exposed to PAHs in the soil on or near hazardous waste sites, such as former manufactured-gas sites and wood-preserving facilities. PAHs have been found in some drinking water supplies in the United States. Background levels of PAHs in drinking water range from 4 to 24 nanograms per liter (ng/L).

In the home, PAHs are present in tobacco smoke, smoke from home burning of wood, creosote-treated wood products, cereals, grains, flour, bread, vegetables, fruits, meat, processed or pickled foods, and contaminated cow's milk or human breast milk. Food grown in contaminated soil or air may also contain PAHs. Cooking meat or other food at high temperatures, which happens during grilling or charring, increases the amount of PAHs in the food. The level of PAHs in the typical U.S. diet is less than 2 parts of total PAHs per billion parts of food (ppb), or less than 2 micrograms per kilogram of food ($\mu g/kg$; a microgram is one-thousandth of a milligram).

The primary sources of exposure to PAHs for most of the U.S. population are inhalation of the compounds in tobacco smoke, wood smoke, and ambient air, and ingestion of PAHs in foods. For some people, the primary exposure to PAHs occurs in the workplace. PAHs have been found in coal tar production plants, coking plants, bitumen and asphalt production plants, coal-gasification sites, smoke houses, aluminum production plants, coal tarring activities, and municipal trash incinerators. PAHs have also been found in other facilities where petroleum, petroleum products, or coal are used or where wood, cellulose, corn, or oil are burned. Populations living near waste sites containing PAHs may be exposed through contact with contaminated air, water, and soil. For more information on human exposure to PAHs see Chapter 5.

1.4 HOW CAN POLYCYCLIC AROMATIC HYDROCARBONS ENTER AND LEAVE MY BODY?

PAHs can enter your body through your lungs when you breathe air that contains them (usually stuck to particles or dust). This is one of the routes of exposure for people living near hazardous waste sites. However, it is not known how rapidly or completely uptake by the lungs occurs. Drinking water and swallowing food, soil, or dust particles that contain PAHs are other routes for these chemicals to enter your body, but uptake is generally slow when PAHs are swallowed. Under normal conditions of environmental exposure, PAHs could rapidly enter your body if your skin comes into contact with soil that contains high levels of PAHs (this could occur near a hazardous waste site) or with used crankcase oil or other products (such as creosote) that contain PAHs. The rate at which PAHs enter your body by ingestion or through the skin is increased when they are present in certain oily mixtures; other oily mixtures decrease absorption into your body.

PAHs can enter all the tissues of your body that contain fat and tend to be stored mostly in your kidneys, liver, and fat, with smaller amounts in your spleen, adrenal glands, and ovaries. PAHs are changed by all tissues in the body into many different substances. Some of these substances are more harmful and some are less harmful than the original PAHs. Results from animal studies show that PAHs do not tend to be stored in your body for a long time. Most PAHs that enter the body leave within a few days, primarily in the feces and urine. More information on how PAHs enter and leave your body can be found in Chapters 2 and 6.

1.5 HOW CAN POLYCYCLIC AROMATIC HYDROCARBONS AFFECT MY HEALTH?

PAHs can be harmful to your health. Several of the PAHs, including benz(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(j)fluoranthene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, and indeno(1,2,3-c,d)pyrene, have caused tumors in laboratory animals when they breathed them in the air, when they ate them, or when they had long periods of skin contact with them. Reports in humans show that individuals exposed by breathing or skin contact for long periods to mixtures that contain PAHs and other compounds can also develop cancer.

Mice fed high levels of benzo(a)pyrene during pregnancy had difficulty reproducing and so did their offspring. The offspring from pregnant mice fed benzo(a)pyrene also showed other harmful effects, such as birth defects and decreased body weight. Similar effects could occur in humans, but we have no information to show that these effects do occur.

Studies in animals have also shown that PAHs can cause harmful effects on skin, body fluids, and the body's system for fighting disease after both short- and long-term exposure. These effects have not been reported in humans.

The Department of Health and Human Services (DHHS) has determined that benzo(a)anthracene, benzo(b)fluoranthene, benzo(j)fluoranthene, benzo(k)fluoranthene,

benzo(a)pyrene, dibenz(a,h)anthracene, and indeno(1,2,3-c,d)pyrene may reasonably be anticipated to be carcinogens. The International Agency for Research on Cancer (IARC) has determined the following: benzo(a)anthracene and benzo(a)pyrene are probably carcinogenic to humans; benzo(b)fluoranthene, benzo(j)fluoranthene, benzo(k)fluoranthene, and indeno(1,2,3-c,d)pyrene are possibly carcinogenic to humans; and anthracene, benzo(g,h,i)perylene, benzo(e)pyrene, chrysene, fluoranthene, fluorene, phenanthrene, and pyrene are not classifiable as to their carcinogenicity to humans. EPA has determined that benz(a)anthracene, benz(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, and indeno(1,2,3-c,d)pyrene are probable human carcinogens and that acenaphthylene, anthracene, benzo(g,h,i)perylene, fluoranthene, fluorene, phenanthrene, and pyrene are not classifiable as to human carcinogenicity. Acenaphthene has not been classified for carcinogenic effects by the DHHS, IARC, or EPA. More information on the health effects associated with exposure to PAHs can be found in Chapter 2.

1.6 IS THERE A MEDICAL TEST TO DETERMINE WHETHER I HAVE BEEN EXPOSED TO POLYCYCLIC AROMATIC HYDROCARBONS?

In your body, PAHs are changed into chemicals that can attach to substances within the body. The presence of PAHs attached to these substances can then be measured in body tissues or blood after exposure to PAHs. PAHs or their breakdown products can also be measured in urine, blood, or body tissues. Although these tests can show that you have been exposed to PAHs, these tests cannot be used to predict if any health effects will occur or to determine the extent of your exposure to the PAHs. It is not known how effective or informative the tests are after exposure is discontinued. These tests to identify PAHs or their products are not routinely available at a doctor's office because they require special equipment for detecting these chemicals. More information on tests used to determine PAHs in your body is presented in Chapters 2 and 6.

1.7 WHAT RECOMMENDATIONS HAS THE FEDERAL GOVERNMENT MADE TO PROTECT HUMAN HEALTH?

The federal government has set regulations to protect individuals from the possible health effects of eating, drinking, or breathing PAHs. EPA has suggested that taking into your body each day the following amounts of individual PAHs is not likely to cause any significant (noncancer) harmful health effects: 0.3 milligrams (mg) of anthracene, 0.06 mg of acenaphthene, 0.04 mg of fluoranthene, 0.04 mg of fluorene, and 0.03 mg of pyrene per kilogram (kg) of your body weight (one kilogram is equal to 2.2 pounds).

Based on data on benzo(a)pyrene, the federal government has developed regulatory standards and guidelines to protect individuals from the potential health effects of PAHs in drinking water. EPA has provided estimates of levels of total cancer-causing PAHs in lakes and streams associated with various risks of developing cancer in humans. If the following amounts of individual PAHs are released to the environment, EPA must be notified: 1 pound of benzo(b)fluoranthene, benzo(a)pyrene, or dibenz(a,h)anthracene; 10 pounds of benzo(a)anthracene; 100 pounds of acenaphthene, chrysene, fluoranthene, or

indeno(1,2,3-c,d)pyrene; or 5,000 pounds of acenaphthylene, anthracene, benzo(k)fluoranthene, benzo(g,h,i)perylene, fluorene, phenanthrene, or pyrene.

PAHs are generally not produced commercially in the United States except as research chemicals. However, PAHs are found in coal, coal tar, and in the creosote oils and pitches formed from the distillation of coal tars. The National Institute for Occupational Safety and Health (NIOSH) concluded that occupational exposure to coal products can increase the risk of lung and skin cancer in workers and established a recommended occupational exposure limit (REL-TWA) for coal tar products of 0.1 milligram of PAHs per cubic meter of air (0.1 mg/m^3) for a 10-hour work day, 40-hour work week. The American Conference of Governmental Industrial Hygienists (ACGIH) recommends an occupational exposure limit for coal tar products of 0.2 mg/m^3 for an 8-hour work day, 40-hour work week. The Occupational Safety and Health Administration (OSHA) has established a legally enforceable limit of 0.2 mg/m^3 averaged over an 8-hour exposure period.

More information on rules and standards for exposure to PAHs can be found in Chapter 7.

1.8 WHERE CAN I GET MORE INFORMATION?

If you have any more questions or concerns, please contact your community or state health or environmental quality department or:

Agency for Toxic Substances and Disease Registry
Division of Toxicology
1600 Clifton Road NE, E-29
Atlanta, Georgia 30333
(404) 639-6000

This agency can also provide you with information on the location of occupational and environmental health clinics. These clinics specialize in the recognition, evaluation, and treatment of illness resulting from exposure to hazardous substances.

HRS DOCUMENTATION RECORD
Hubert Wheeler State School - 09/19/94

1. Site Name: Hubert Wheeler State School
(as entered in CERCLIS)

2. Site CERCLIS Number: MO0000093666

3. Site Reviewer: Julie A. Bloss

4. Date: September 19, 1994

5. Site Location: St. Louis City, Missouri
(City/County,State)

6. Congressional District: 01

7. Site Coordinates: Single

Latitude: 38 35'26.8" Longitude: 090 17'51.5"

	Score
Ground Water Migration Pathway Score (Sgw)	0.00
Surface Water Migration Pathway Score (Ssw)	0.00
Soil Exposure Pathway Score (Ss)	100.00
Air Migration Pathway Score (Sa)	0.00
Site Score	50.00 *

NOTE

EPA uses the terms "facility," "site," and "release" interchangeably. The term "facility" is broadly defined in CERCLA to include any area where hazardous substances have "come to be located" (CERCLA Section 109(9)), and the listing process is not intended to define or reflect boundaries of such facilities or releases. Site names, and references to specific parcels or properties, are provided for general identification purposes only. Knowledge regarding the extent of sites will be refined as more information is developed during the RI/FS and even during implementation of the remedy.

* - Site scoring was limited to the on-site threat for the soil exposure pathway. Future consideration may need to be given to the air pathway and the nearby population threat. The groundwater and surface water pathways are not significant at this site, due to low resource quality and/or use.

1. WASTESTREAM QUANTITY SUMMARY TABLE, SOURCE: Coal tar seam

a. Wastestream ID	
b. Hazardous Constituent Quantity (C) (lbs.)	0.00
c. Data Complete?	NO
d. Hazardous Wastestream Quantity (W) (lbs.)	0.00
e. Data Complete?	NO
f. Wastestream Quantity Value (W/5,000)	0.00E+00

2. SOURCE HAZARDOUS WASTE QUANTITY FACTOR TABLE

a. Source ID	Coal tar seam	
b. Source Type	Other	
c. Secondary Source Type	N.A.	
d. Source Vol.(yd3/gal) | Source Area (ft2)	204.00	0.00
e. Source Volume/Area Value	8.16E+01	
f. Source Hazardous Constituent Quantity (HCQ) Value (sum of 1b)	0.00E+00	
g. Data Complete?	NO	
h. Source Hazardous Wastestream Quantity (WSQ) Value (sum of 1f)	0.00E+00	
i. Data Complete?	NO	
k. Source Hazardous Waste Quantity (HWQ) Value (2e, 2f, or 2h)	8.16E+01	

Source Hazardous Substances	Depth (feet)	Liquid	Concent.	Units
Acenaphthene	< 2	YES	7.2E+03	ppm
Anthracene	< 2	YES	1.4E+04	ppm
Benz(a)anthracene	< 2	YES	1.4E+04	ppm
Benzo(a)pyrene	< 2	YES	3.2E+04	ppm
Benzo(g,h,i)perylene	< 2	YES	1.2E+03	ppm
Benzo(j,k)fluorene	< 2	YES	4.7E+04	ppm
Benzo(k)fluoranthene	< 2	YES	2.2E+04	ppm
Benzofluoranthene, 3,4-	< 2	YES	2.2E+04	ppm
Chrysene	< 2	YES	1.7E+04	ppm
Dibenz(a,h)anthracene	< 2	YES	1.1E+04	ppm
Dibenzofuran	< 2	YES	4.2E+03	ppm
Fluorene	< 2	YES	7.3E+03	ppm
Indeno(1,2,3-CD)pyrene	< 2	YES	2.0E+04	ppm
Methyl Napthalene, 2-	< 2	YES	1.0E+03	ppm
Naphthalene	< 2	YES	1.8E+03	ppm
Phenanthrene	< 2	YES	2.8E+04	ppm
Pyrene	< 2	YES	2.8E+04	ppm
Selenium	< 2	NO	2.0E+00	ppm

Documentation for Source Hazardous Substances:

The source values were taken from sample 94-1711, collected by MDNR on July 7, 1994. This sample was a grab of the black tar-like material collected from where it oozes from the subsurface (Reference 43).

Reference: 43

Documentation for Source Volume:

The seam of tar-like contamination is reportedly nine inches thick (Reference 39). Infrared thermography and ground penetrating radar conducted on the asphalt playground indicated the presence of anomaly areas under the asphalt playground (Reference 44). The asphalt playground area is 72.5 feet by 101.5 feet in size (Reference 39).

9/12 feet x 72.5 feet x 101.5 feet = about 5519 cubic feet
5519 cubic feet / 27 cubic feet = about 204 cubic yards

Reference: 39,44

1. WASTESTREAM QUANTITY SUMMARY TABLE, SOURCE: Contaminated soil

a. Wastestream ID	
b. Hazardous Constituent Quantity (C) (lbs.)	0.00
c. Data Complete?	NO
d. Hazardous Wastestream Quantity (W) (lbs.)	0.00
e. Data Complete?	NO
f. Wastestream Quantity Value (W/5,000)	0.00E+00

2. SOURCE HAZARDOUS WASTE QUANTITY FACTOR TABLE

a. Source ID	Contaminated soil	
b. Source Type	Contaminated Soil	
c. Secondary Source Type	N.A.	
d. Source Vol.(yd3/gal)	0.00	Source Area (ft2) 174240.00
e. Source Volume/Area Value	5.12E+00	
f. Source Hazardous Constituent Quantity (HCQ) Value (sum of 1b)	0.00E+00	
g. Data Complete?	NO	
h. Source Hazardous Wastestream Quantity (WSQ) Value (sum of 1f)	0.00E+00	
i. Data Complete?	NO	
k. Source Hazardous Waste Quantity (HWQ) Value (2e, 2f, or 2h)	5.12E+00	

Source Hazardous Substances	Depth (feet)	Liquid	Concent.	Units
Benz(a)anthracene	< 2	NO	1.1E+00	ppm
Benzo(a)pyrene	< 2	NO	2.0E+00	ppm
Benzo(j,k)fluorene	< 2	NO	4.0E+00	ppm
Chrysene	< 2	NO	1.3E+00	ppm
Phenanthrene	< 2	NO	2.5E+00	ppm
Pyrene	< 2	NO	3.2E+00	ppm

Documentation for Source Hazardous Substances:

Six soil samples were collected by MDNR on July 7, 1994. Traces of semi-volatile compounds were detected in all six samples, indicating that no true background sample had been collected. The values listed are from sample 94-1708, the most contaminated surficial soil sample (Reference 43).

Based upon these results, Level II soil contamination has been detected in soils surrounding the school.

Reference: 43

Documentation for Source Area:

The Hubert Wheeler State School property is 4 acres in size (Reference 39).

43,560 square feet / acre x 4 acres = 174,240 square feet

Reference: 39

WASTE QUANTITY
Hubert Wheeler State School - 09/19/94

3. SITE HAZARDOUS WASTE QUANTITY SUMMARY

No.	Source ID	Migration Pathways	Vol. or Area Value (2e)	Constituent or Wastestream Value (2f,2h)	Hazardous Waste Qty. Value (2k)
1	Coal tar seam	GW-SW-SE-A	8.16E+01	0.00E+00	8.16E+01
2	Contaminated soil	GW-SW-SE-A	5.12E+00	0.00E+00	5.12E+00

4. PATHWAY HAZARDOUS WASTE QUANTITY AND WASTE CHARACTERISTICS SUMMARY TABLE

Migration Pathway	Contaminant Values		HWQVs*	WCVs**
Ground Water	Toxicity/Mobility	1.00E+00	10	2
SW: Overland Flow, DW	Tox./Persistence	1.00E+04	10	18
SW: Overland Flow, HFC	Tox./Persis./Bioacc.	5.00E+08	10	180
SW: Overland Flow, Env	Etox./Persis./Bioacc.	5.00E+08	10	180
SW: GW to SW, DW	Tox./Persistence	1.00E+00	10	2
SW: GW to SW, HFC	Tox./Persis./Bioacc.	5.00E+04	10	18
SW: GW to SW, Env	Etox./Persis./Bioacc.	5.00E+04	10	18
Soil Exposure:Resident	Toxicity	1.00E+04	10	18
Soil Exposure: Nearby	Toxicity	1.00E+04	10	18
Air	Toxicity/Mobility	2.00E+01	10	3

* Hazardous Waste Quantity Factor Values
** Waste Characteristics Factor Category Values

Note: SW = Surface Water
GW = Ground Water
DW = Drinking Water Threat
HFC = Human Food Chain Threat
Env = Environmental Threat

PREscore 3.0 - PRESCORE.TCL File 07/25/94
NPL Characteristics Data Collection Form
Hubert Wheeler State School - 09/19/94

Record Information

1. Site Name: Hubert Wheeler State School
   (as entered in CERCLIS)

2. Site CERCLIS Number: MO0000093666

3. Site Reviewer: Julie A. Bloss

4. Date: September 19, 1994

5. Site Location: St. Louis City, Missouri
   (City/County,State)

6. Congressional District: 01

7. Site Coordinates: Single

   Latitude: 38 35'26.8" Longitude: 090 17'51.5"

Site Description

1. Setting: Urban

2. Current Owner: State

3. Current Site Status: Site with Unknown Source

4. Years of Operation: Unknown

5. How Initially Identified: Other - Consultant notified MDNR.

6. Entity Responsible for Waste Generation:

   - Other - clay mine, dump areas

7. Site Activities/Waste Deposition:

   - Waste Piles
   - Illegal Dumping

Waste Description

8. Wastes Deposited or Detected Onsite:

   - Oily Waste
   - Construction Waste

Response Actions

9. Response/Removal Actions:

   - Site Access Has Been Restricted

RCRA Information

10. For All Active Facilities, RCRA Site Status:

    - Not Applicable

Demographic Information

11. Workers Present Onsite: Yes

12. Distance to Nearest Non-Worker Individual: > 10 Feet - 1/4 Mile

13. Residential Population Within 1 Mile: 190305.0

14. Residential Population Within 4 Miles: 761222.0

Water Use Information

15. Local Drinking Water Supply Source:

    - No Water Withdrawals Within Target Distance Limits

16. Total Population Served by Local Drinking Water Supply Source: Not Applic

17. Drinking Water Supply System Type for Local Drinking Water Supply Sources:

- Not Applicable

18. Surface Water Adjacent to/Draining Site:

- Other - run-off enters storm drain

SOIL EXPOSURE PATHWAY SCORESHEET
Hubert Wheeler State School - 09/19/94

SOIL EXPOSURE PATHWAY Factor Categories & Factors RESIDENT POPULATION THREAT	Maximum Value	Value Assigned
Likelihood of Exposure		
1. Likelihood of Exposure	550	550
Waste Characteristics		
2. Toxicity	*	1.00E+04
3. Hazardous Waste Quantity	*	10
4. Waste Characteristics	100	18
Targets		
5. Resident Individual	50	5.00E+01
6. Resident Population		
6a. Level I Concentrations	**	1.10E+03
6b. Level II Concentrations	**	3.10E+01
6c. Resident Population (lines 6a+6b)	**	1.13E+03
7. Workers	15	5.00E+00
8. Resources	5	0.00E+00
9. Terrestrial Sensitive Environments	***	0.00E+00
10. Targets (lines 5+6c+7+8+9)	**	1.19E+03
11. RESIDENT POPULATION THREAT SCORE	**	1.17E+07

* Maximum value applies to waste characteristics category.
** Maximum value not applicable.
*** No specific maximum value applies, see HRS for details.

SOIL EXPOSURE PATHWAY RESIDENT POPULATION THREAT LIKELIHOOD OF EXPOSURE
Hubert Wheeler State School - 09/19/94

Likelihood of Exposure

No.	Source ID	Level of Contamination
1	Coal tar seam	Level I
2	Contaminated soil	Level I

Likelihood of Exposure Factor: 550

Source No.	Hazardous Substance	Depth (ft.)	Concent.	Cancer	RFD	Units
1	Acenaphthene	< 2	7.2E+03	0.0E+00	3.5E+04	ppm
1	Anthracene	< 2	1.4E+04	0.0E+00	1.7E+05	ppm
1	Benz(a)anthracene	< 2	1.4E+04	0.0E+00	0.0E+00	ppm
1	Benzo(a)pyrene	< 2	3.2E+04	8.0E-02	0.0E+00	ppm
1	Benzo(g,h,i)perylene	< 2	1.2E+03	0.0E+00	0.0E+00	ppm
1	Benzo(j,k)fluorene	< 2	4.7E+04	0.0E+00	2.3E+04	ppm
1	Benzo(k)fluoranthene	< 2	2.2E+04	0.0E+00	0.0E+00	ppm
1	Benzofluoranthene, 3,4-	< 2	2.2E+04	0.0E+00	0.0E+00	ppm
1	Chrysene	< 2	1.7E+04	0.0E+00	0.0E+00	ppm
1	Dibenz(a,h)anthracene	< 2	1.1E+04	0.0E+00	0.0E+00	ppm
1	Dibenzofuran	< 2	4.2E+03	0.0E+00	0.0E+00	ppm
1	Fluorene	< 2	7.3E+03	0.0E+00	2.3E+04	ppm
1	Indeno(1,2,3-CD)pyrene	< 2	2.0E+04	0.0E+00	0.0E+00	ppm
1	Methyl Napthalene, 2-	< 2	1.0E+03	0.0E+00	0.0E+00	ppm
1	Naphthalene	< 2	1.8E+03	0.0E+00	0.0E+00	ppm
1	Phenanthrene	< 2	2.8E+04	0.0E+00	0.0E+00	ppm
1	Pyrene	< 2	2.8E+04	0.0E+00	1.7E+04	ppm
1	Selenium	< 2	2.0E+00	0.0E+00	2.9E+03	ppm
2	Benz(a)anthracene	< 2	1.1E+00	0.0E+00	0.0E+00	ppm
2	Benzo(a)pyrene	< 2	2.0E+00	8.0E-02	0.0E+00	ppm
2	Benzo(j,k)fluorene	< 2	4.0E+00	0.0E+00	2.3E+04	ppm
2	Chrysene	< 2	1.3E+00	0.0E+00	0.0E+00	ppm
2	Phenanthrene	< 2	2.5E+00	0.0E+00	0.0E+00	ppm
2	Pyrene	< 2	3.2E+00	0.0E+00	1.7E+04	ppm

Documentation for Source Coal tar seam, Contaminants:

The source values were taken from sample 94-1711, collected by MDNR on July 7, 1994. This sample was a grab of the black tar-like material collected from where it oozes from the subsurface (Reference 43).

Reference: 43

Documentation for Source Contaminated soil, Contaminants:

Six soil samples were collected by MDNR on July 7, 1994. Traces of semi-volatile compounds were detected in all six samples, indicating that no true background sample had been collected. The values listed are from sample 94-1708, the most contaminated surficial soil sample (Reference 43).

Based upon these results, Level II soil contamination has been detected in soils surrounding the school.

Reference: 43

SOIL EXPOSURE PATHWAY RESIDENT POPULATION THREAT WASTE CHARACTERISTICS
Hubert Wheeler State School - 09/19/94

Source: 1 Coal tar seam

Source Hazardous Waste Quantity Value: 0.00

Hazardous Substance	Toxicity Value
Acenaphthene	10
Anthracene	10
Benz(a)anthracene	1000
Benzo(a)pyrene	10000
Benzo(g,h,i)perylene	0
Benzo(j,k)fluorene	100
Benzo(k)fluoranthene	0
Benzofluoranthene, 3,4-	10000
Chrysene	0
Dibenz(a,h)anthracene	0
Dibenzofuran	0
Fluorene	100
Indeno(1,2,3-CD)pyrene	0
Methyl Napthalene, 2-	0
Naphthalene	1
Phenanthrene	0
Pyrene	100
Selenium	100

SOIL EXPOSURE PATHWAY RESIDENT POPULATION THREAT WASTE CHARACTERISTICS
Hubert Wheeler State School - 09/19/94

Source: 2 Contaminated soil

Source Hazardous Waste Quantity Value: 5.12

Hazardous Substance	Toxicity Value
Benz(a)anthracene	1000
Benzo(a)pyrene	10000
Benzo(j,k)fluorene	100
Chrysene	0
Phenanthrene	0
Pyrene	100

SOIL EXPOSURE PATHWAY RESIDENT POPULATION THREAT WASTE CHARACTERISTICS

Hubert Wheeler State School - 09/19/94

Toxicity Factor:	1.00E+04
Sum of Source Hazardous Waste Quantity Values:	5.12E+00
Hazardous Waste Quantity Factor:	10
Waste Characteristics Factor Category:	18

Targets

Level I Population: 110.0 Value: 1100.00

Documentation for Level I Population:

The Hubert Wheeler State School formerly supported 110 students (Reference 41).

Reference: 41

Level II Population: 31.0 Value: 31.00

Documentation for Level II Population:

Thirteen residential properties border or are in close proximity to the Hubert Wheeler State School (Reference 37). The average population per household in St. Louis City is 2.34 (Reference 13), for an approximate 31 residents within 200 feet of the site.

Reference: 13,37

Workers: 60.0 Value: 5.00

Documentation for Workers:

Hubert Wheeler State School formerly was the workplace for 54 faculty and 6 administrative staff members. Currently, only the administrative staff remains on-site (Reference 41).

Reference: 41

SOIL EXPOSURE PATHWAY RESIDENT POPULATION THREAT TARGETS

Hubert Wheeler State School - 09/19/94

Resident Individual: Level I Value: 50.00

Resources: NO Value: 0.00

Terrestial Sensitive Environment	Value
- N/A and/or data not specified	

Terrestrial Sensitive Environments Factor: 0.00

SOIL EXPOSURE PATHWAY SCORESHEET
Hubert Wheeler State School - 09/19/94

SOIL EXPOSURE PATHWAY Factor Categories & Factors NEARBY POPULATION THREAT	Maximum Value	Value Assigned
Likelihood of Exposure		
12. Attractiveness/Accessibility	100	1.00E+02
13. Area of Contamination	100	0.00E+00
14. Likelihood of Exposure	500	0.00E+00
Waste Characteristics		
15. Toxicity	*	1.00E+04
16. Hazardous Waste Quantity	*	10
17. Waste Characteristics	100	18
Targets		
18. Nearby Individual	1	0.00E+00
19. Population Within 1 Mile	**	0.00E+00
20. Targets (lines 18+19)	**	0.00E+00
21. NEARBY POPULATION THREAT SCORE	**	0.00E+00
SOIL EXPOSURE PATHWAY SCORE (Ss)	100	100.00

* Maximum value applies to waste characteristics category.
** Maximum value not applicable.

SOIL EXPOSURE PATHWAY NEARBY POPULATION THREAT LIKELIHOOD OF EXPOSURE
Hubert Wheeler State School - 09/19/94

Likelihood of Exposure

No.	Source ID	Level of Contamination	Attractiveness/ Accessibility	Area of Contam. (sq. feet)
1	Coal tar seam	Level I	100	0
2	Contaminated soil	Level I	75	0

Highest Attractiveness/Accessibility Value: 100
Sum of Eligible Areas Of Contamination (sq. feet): 0
Area of Contamination Value: 0

Likelihood of Exposure Factor Category: 0

Documentation for Attractiveness/Accessibility, Source Coal tar seam:

The area of observed contamination was formerly used as a playground (Reference 7).

Reference: 7

Source No.	Hazardous Substance	Depth (ft.)	Concent.	Cancer	RFD	Units
1	Acenaphthene	< 2	7.2E+03	0.0E+00	3.5E+04	ppm
1	Anthracene	< 2	1.4E+04	0.0E+00	1.7E+05	ppm
1	Benz(a)anthracene	< 2	1.4E+04	0.0E+00	0.0E+00	ppm
1	Benzo(a)pyrene	< 2	3.2E+04	8.0E-02	0.0E+00	ppm
1	Benzo(g,h,i)perylene	< 2	1.2E+03	0.0E+00	0.0E+00	ppm
1	Benzo(j,k)fluorene	< 2	4.7E+04	0.0E+00	2.3E+04	ppm
1	Benzo(k)fluoranthene	< 2	2.2E+04	0.0E+00	0.0E+00	ppm
1	Benzofluoranthene, 3,4-	< 2	2.2E+04	0.0E+00	0.0E+00	ppm
1	Chrysene	< 2	1.7E+04	0.0E+00	0.0E+00	ppm
1	Dibenz(a,h)anthracene	< 2	1.1E+04	0.0E+00	0.0E+00	ppm
1	Dibenzofuran	< 2	4.2E+03	0.0E+00	0.0E+00	ppm
1	Fluorene	< 2	7.3E+03	0.0E+00	2.3E+04	ppm
1	Indeno(1,2,3-CD)pyrene	< 2	2.0E+04	0.0E+00	0.0E+00	ppm
1	Methyl Napthalene, 2-	< 2	1.0E+03	0.0E+00	0.0E+00	ppm
1	Naphthalene	< 2	1.8E+03	0.0E+00	0.0E+00	ppm
1	Phenanthrene	< 2	2.8E+04	0.0E+00	0.0E+00	ppm
1	Pyrene	< 2	2.8E+04	0.0E+00	1.7E+04	ppm
1	Selenium	< 2	2.0E+00	0.0E+00	2.9E+03	ppm
2	Benz(a)anthracene	< 2	1.1E+00	0.0E+00	0.0E+00	ppm
2	Benzo(a)pyrene	< 2	2.0E+00	8.0E-02	0.0E+00	ppm

2	Benzo(j,k)fluorene	< 2	4.0E+00	0.0E+00	2.3E+04	ppm
2	Chrysene	< 2	1.3E+00	0.0E+00	0.0E+00	ppm
2	Phenanthrene	< 2	2.5E+00	0.0E+00	0.0E+00	ppm
2	Pyrene	< 2	3.2E+00	0.0E+00	1.7E+04	ppm

Documentation for Source Coal tar seam, Contaminants:

The source values were taken from sample 94-1711, collected by MDNR on July 7, 1994. This sample was a grab of the black tar-like material collected from where it oozes from the subsurface (Reference 43).

Reference: 43

Documentation for Source Contaminated soil, Contaminants:

Six soil samples were collected by MDNR on July 7, 1994. Traces of semi-volatile compounds were detected in all six samples, indicating that no true background sample had been collected. The values listed are from sample 94-1708, the most contaminated surficial soil sample (Reference 43).

Based upon these results, Level II soil contamination has been detected in soils surrounding the school.

Reference: 43

SOIL EXPOSURE PATHWAY NEARBY POPULATION THREAT WASTE CHARACTERISTICS
Hubert Wheeler State School - 09/19/94

Source: 1 Coal tar seam

Source Hazardous Waste Quantity Value: 0.00

Hazardous Substance	Toxicity Value
Acenaphthene	10
Anthracene	10
Benz(a)anthracene	1000
Benzo(a)pyrene	10000
Benzo(g,h,i)perylene	0
Benzo(j,k)fluorene	100
Benzo(k)fluoranthene	0
Benzofluoranthene, 3,4-	10000
Chrysene	0
Dibenz(a,h)anthracene	0
Dibenzofuran	0
Fluorene	100
Indeno(1,2,3-CD)pyrene	0
Methyl Napthalene, 2-	0
Naphthalene	1
Phenanthrene	0
Pyrene	100
Selenium	100

SOIL EXPOSURE PATHWAY NEARBY POPULATION THREAT WASTE CHARACTERISTICS
Hubert Wheeler State School - 09/19/94

Source: 2 Contaminated soil

Source Hazardous Waste Quantity Value: 5.12

Hazardous Substance	Toxicity Value
Benz(a)anthracene	1000
Benzo(a)pyrene	10000
Benzo(j,k)fluorene	100
Chrysene	0
Phenanthrene	0
Pyrene	100

SOIL EXPOSURE PATHWAY NEARBY POPULATION THREAT WASTE CHARACTERISTICS

Hubert Wheeler State School - 09/19/94

Toxicity Factor:	1.00E+04
Sum of Source Hazardous Waste Quantity Values:	5.12E+00
Hazardous Waste Quantity Factor:	10
Waste Characteristics Factor Category:	18

SOIL EXPOSURE PATHWAY NEARBY POPULATION THREAT TARGETS
Hubert Wheeler State School - 09/19/94

Nearby Individual

Population within 1/4 mile: 0.0

Nearby Individual Value: 0.0

Population Within 1 Mile

Travel Distance Category	Number of People	Value
> 0 to 1/4 mile	0.0	0.0
> 1/4 to 1/2 mile	0.0	0.0
> 1/2 to 1 mile	0.0	0.0

Population Within 1 Mile Factor: 0.0